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ABSTRACT

This document reports on statistics of research and development (R&D) within the United States according to the geographical distribution for 1997-1998. Science and engineering profiles for 50 states, the District of Columbia, and Puerto Rico are presented. Topics include State Distribution of Sector-Specific R&D, Ten-Year State R&D Trends, Historical Data on R&D by State and Performing Sector, Ratio of R&D to Gross State Product, Industrial R&D by State, Federal Support for R&D, and Data Sources for Science and Engineering State Profiles. (YDS)

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State Science and Engineering Profiles and R&D Patterns: 1997-98

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An SRS Special Report

Division of Science Resources Studies
Directorate for Social, Behavioral, and Economic Sciences

National Science Foundation

September 2000

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State Science and Engineering Profiles and R&D Patterns: 1997-98

An SRS Special Report

Richard Bennof and Steven Payson

Division of Science Resources Studies
Directorate for Social, Behavioral, and Economic Sciences

National Science Foundation

September 2000

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OVERVIEW

INTRODUCTION

Economists and policy makers have long considered research and development (R&D) to be a key component of economic growth. The contribution of R&D activities to local economies has been a topic of particular interest to State policymakers. This report, *State Science and Engineering Profiles and R&D Patterns: 1997-98*, provides statistics on the geographic distribution of R&D within the United States. R&D data for 52 areas—each of the 50 States, the District of Columbia and Puerto Rico—are derived from the several performer-based[1] surveys of the National Science Foundation's (NSF's) R&D Statistics Program. For each State (or geographic area), table 1 categorizes these data by major source of funds (industry, Federal Government, and academia), and by type of performer (industry, Federal Government, academia, Federally Funded Research and Development Centers (FFRDC's), and other nonprofit institutions).[2]

In 1997, total R&D expenditures in the United States were $211 billion, of which $199 billion could be attributed to expenditures within individual States, with the remainder falling under an undistributed, "other/unknown" category. The statistics and discussion below refer to State R&D levels in relation to the distributed total of $199 billion.

The "other/unknown" category includes R&D performed within the 50 States or the District of Columbia, for which survey respondents did not provide the specific location of such performance. It also includes R&D conducted by organizations within the United States that did not perform the actual R&D in a particular State or the District of Columbia, e.g., research conducted on marine vessels, and research in Puerto Rico.

In addition, this report includes science and engineering profiles for the 50 States, the District of Columbia, and Puerto Rico. These profiles were compiled from 15 sources, including NSF statistical reports and statistical reports from other Federal agencies, namely, the Department of Commerce (DOC), the Department of Labor (DOL), the Department of Education (ED), the U.S. Patent and Trademark Office, and the U.S. Small Business Administration (SBA). A complete listing of these sources is provided at the end of this overview.[3]

[1] In any discussion of R&D expenditures, an important distinction must be made between R&D "performance" (the situation in which R&D is actually carried out) and R&D funding "sources" (where the money for R&D originates). For example, a term such as "Federal R&D" is ambiguous in that it does not specify whether it is referring to performance or funding. The Federal Government is a much larger source of R&D funding (termed "Federal Funding of R&D") than a performer of R&D itself (termed "Federal Intramural R&D"). In the reporting of R&D by State, much more attention has been paid to R&D performance within States than R&D funding originating from states. Since R&D performance is an important component of the economic activity of the State, and the geographic location of funding organizations may have little bearing on economic activity within the same State, this report will focus on R&D performance.

[2] At present, data on R&D performed by nonprofit institutions within individual States include only R&D derived from Federal funding.

[3] Some data elements in this report come from sample surveys. All statements in the text based on sample survey data are statistically significant to the 0.05 level, unless otherwise noticed.

Table 1. State distribution of R&D expenditures, by pe

Performing sector / Funding sector	Rank in Total R&D	Total R&D	Federal Govt.	Industry[1]				
				Total	Federal Govt.[1]	Industry[2]	Total	
								(In m
United States, total		211,268	16,814	157,539	23,928	133,611	25,001	
Alabama	25	1,637	660	589	189	399	369	
Alaska	48	136	38	24	D	D	71	
Arizona	21	2,410	144	1,854	677	1,177	377	
Arkansas	45	272	49	118	D	D	102	
California	1	41,670	1,454	34,011	5,977	28,034	2,979	
Colorado	17	3,205	195	2,248	525	1,723	427	
Connecticut	16	3,454	33	3,014	307	2,707	393	
Delaware	31	1,089	10	1,009	8	1,001	65	
District of Columbia	20	2,768	1,733	645	D	D	214	
Florida	12	4,784	649	3,442	1,461	1,981	682	
Georgia	22	2,272	225	1,273	212	1,062	766	
Hawaii	44	275	54	87	55	32	120	
Idaho	30	1,270	24	1,181	D	D	64	
Illinois	8	8,034	77	6,248	163	6,085	930	
Indiana	18	3,149	68	2,677	D	D	400	
Iowa	34	960	29	578	D	D	342	
Kansas	29	1,351	16	1,136	D	D	198	
Kentucky	38	526	7	359	3	356	158	
Louisiana	37	554	48	172	D	D	330	
Maine	47	149	6	83	D	D	33	
Maryland	10	7,395	4,569	1,425	456	970	1,242	
Massachusetts	5	11,097	361	8,300	1,397	6,903	1,268	
Michigan	2	13,991	108	13,009	121	12,888	842	
Minnesota	15	3,605	35	3,116	362	2,754	363	
Mississippi	41	370	165	73	D	D	125	
Missouri	24	1,826	51	1,290	30	1,260	465	
Montana	46	199	33	92	D	D	71	
Nebraska	43	275	24	71	D	D	176	
Nevada	39	517	46	380	D	D	88	

See explanatory information and SOURCE at end of table.

rforming sector and source of funds: 1997

U&Cs					U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Federal Govt.	Non-fed. Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
millions of current dollars)[5]							
14,849	1,940	1,773	4,686	1,754	5,466	3,036	820
231	5	30	85	18	0	19	0
28	4	13	26	0	0	2	0
198	10	19	137	13	29	6	0
35	29	8	24	6	0	2	0
2,028	129	160	440	221	2,549	474	203
290	27	24	50	37	136	50	148
242	14	25	76	35	0	15	0
32	3	3	20	7	0	4	0
154	1	18	24	16	0	176	0
334	89	48	176	34	0	11	0
347	69	73	252	24	0	7	0
72	28	6	13	0	0	13	0
18	22	9	15	0	0	0	0
530	54	50	220	75	725	54	0
209	24	33	114	20	0	4	0
162	53	24	84	19	28	3	0
75	45	12	57	9	0	1	0
76	7	20	53	2	0	1	0
128	75	32	76	17	0	4	0
15	2	6	11	0	0	27	0
927	81	40	114	80	0	155	4
915	29	103	125	96	353	652	163
454	51	57	206	75	0	32	0
200	51	24	54	34	0	92	0
62	29	9	14	10	0	7	0
261	24	37	111	32	0	21	0
31	14	8	16	1	0	4	0
60	47	14	49	5	0	5	0
44	4	5	31	4	0	2	0

Table 1. State distribution of R&D expenditures, by p

Performing sector / Funding sector	Rank in Total R&D	Total R&D	Federal Govt.	Industry[1]			
				Total	Federal Govt.[1]	Industry[2]	Total
							(D
New Hampshire	35	799	37	652	D	D	108
New Jersey	4	12,067	459	11,069	117	10,952	462
New Mexico	19	3,028	366	1,310	D	D	219
New York	3	12,307	136	9,939	2,078	7,861	1,784
North Carolina	13	4,667	230	3,590	111	3,478	786
North Dakota	49	116	26	33	0	33	56
Ohio	11	7,145	681	5,608	604	5,004	764
Oklahoma	36	644	44	428	45	383	163
Oregon	27	1,520	90	1,102	28	1,075	291
Pennsylvania	7	8,209	151	6,609	672	5,937	1,241
Rhode Island	32	1,040	202	704	D	D	112
South Carolina	33	1,040	34	783	83	700	219
South Dakota	51	71	19	26	0	26	25
Tennessee	26	1,566	78	1,089	D	D	330
Texas	6	9,487	560	7,265	784	6,481	1,561
Utah	28	1,381	117	1,027	199	829	234
Vermont	42	314	7	246	D	D	60
Virginia	14	4,136	1,655	1,767	851	916	455
Washington	9	7,543	167	6,610	D	D	506
West Virginia	40	427	87	233	D	D	64
Wisconsin	23	2,256	43	1,707	29	1,678	497
Wyoming	50	87	9	28	0	28	48
Other/unknown		12,161	704	7,210	6,384	18,898	1,336

[1] Includes performance at industry FFRDCs.

[2] Industry sources of industry R&D expenditures include all non-federal sources of industry R&D.

[3] Includes total R&D expenditures of FFRDCs administered by academic institutions.

[4] Other sources of support for nonprofit institutions were unavailable.

[5] Industry R&D data are in reference to calendar years; other R&D data are in reference to fiscal

KEY FFRDCs = Federally Funded Research and Development Centers
U&Cs = Universities and colleges
D = Data withheld to avoid disclosing operations of individual companies

SOURCES National Science Foundation/Division of Science Resources Studies. Data were de
Research and Development in Industry: 1997; Academic Research and Developmen
Development: Fiscal Years 1997, 1998, and 1999.

performing sector and source of funds: 1997

	U&Cs					U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
	Federal Govt.	Non-fed. Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
n millions of current dollars)[5]								
	67	8	5	15	12	0	2	0
	224	37	26	140	35	59	16	2
	145	15	10	42	7	1,122	10	0
	1,152	80	96	245	211	239	209	0
	439	116	96	106	29	0	61	0
	24	1	3	26	2	0	0	0
	418	70	83	144	49	0	92	0
	71	19	14	45	13	0	9	0
	196	32	10	36	18	0	37	0
	808	42	139	183	70	32	175	0
	79	1	2	27	3	0	22	0
	103	21	9	66	21	0	4	0
	11	8	1	3	1	0	2	0
	199	38	17	53	23	44	26	0
	845	170	132	270	164	0	80	1
	158	18	14	36	8	0	3	0
	34	3	5	11	6	0	1	0
	270	47	40	74	24	80	37	143
	366	15	41	69	17	0	115	144
	30	2	4	23	5	33	11	0
	284	41	19	98	56	0	9	0
	15	6	2	24	1	0	2	0
	753	129	92	276	87	38	269	11

expenditures

years but may serve as approximations to calendar year data

rived from National Science Foundation/Division of Science Resources Studies.
t Expenditures: Fiscal Year 1997, and *Federal Funds for Research and*

State Distribution of Sector-Specific R&D

R&D activities are highly concentrated in a small number of States. Thus, in 1997, California had the highest level of R&D expenditures—nearly $42 billion—representing approximately one-fifth of the $199 billion U.S. total. The six States with the highest levels of R&D expenditures—California, Michigan, New York, New Jersey, Massachusetts, and Texas (in decreasing order of magnitude)—accounted for almost one-half of the entire national expenditure. The top 10 States*—adding, in descending order, Pennsylvania, Illinois, Washington, and Maryland—accounted for nearly two-thirds of the national expenditure (table 1). Among these 10 States, California's R&D effort exceeded, by nearly a factor of three, the next-highest State, Michigan, with $14 billion in R&D expenditures. After Michigan, R&D levels declined relatively smoothly to approximately $7 billion for Maryland (table 2). The 20 highest-ranking States in R&D expenditures accounted for about 81 percent of the U.S. total; the lowest 20 States accounted for only 4 percent (table 3).

States that are national leaders in total R&D performance are usually ranked among the leading sites in industrial and academic R&D performance (table 2). For industrial R&D, nine of the top 10 States were among the top 10 for total R&D, with Ohio joining the top industrial R&D States replacing Maryland. For academic R&D, North Carolina and Georgia replaced New Jersey and Washington.

There was less commonality with the top 10 for total R&D among those States that performed the most Federal intramural research. Only four States were found in both top-10 lists: Maryland, California, Texas, and New Jersey. The six additions to the Federal intramural list, in descending order of Federal R&D performance, were the District of Columbia, Virginia, Ohio, Alabama, Florida, and New Mexico. Maryland ranked first among Federal R&D performers, followed by the District of Columbia, Virginia, and California.

The placement of Maryland, the District of Columbia, and Virginia as the top three in Federal R&D performance reflects the concentration of Federal facilities and

Table 2. R&D performance by sector and R&D as a percentage of GSP, for the top 10 R&D performing States: 1997

	Top 10 States in R&D performance		Top 10 States by performing sector			Top 10 States in R&D intensity (States with the highest R&D/GSP ratio)		
Rank	Total R&D (in millions of dollars)	All R&D performers in the State[1]	Industry[2]	Universities & colleges[3]	Federal Government	Top 10 States	R&D/GSP (percent)	GSP (preliminary, in billions of dollars)
1	41,670	California	California	California	Maryland	New Mexico	6.7	45.2
2	13,991	Michigan	Michigan	New York	District of Columbia	District of Columbia	5.3	52.4
3	12,307	New York	New Jersey	Texas	Virginia	Michigan	5.1	272.6
4	12,067	New Jersey	New York	Massachusetts	California	Massachusetts	5.0	221.0
5	11,097	Massachusetts	Massachusetts	Maryland	Ohio	Maryland	4.8	153.8
6	9,487	Texas	Texas	Pennsylvania	Alabama	Washington	4.4	172.3
7	8,209	Pennsylvania	Washington	Illinois	Florida	Idaho	4.4	29.1
8	8,034	Illinois	Pennsylvania	Michigan	Texas	New Jersey	4.1	294.1
9	7,543	Washington	Illinois	North Carolina	New Jersey	California	4.0	1,033.0
10	7,395	Maryland	Ohio	Georgia	New Mexico	Rhode Island	3.7	27.8

[1] Includes in-state R&D performance of industry, universities, Federal agencies, and FFRDCs. For the tabulations, States include the District of Columbia.

[2] Includes R&D activities of industry-administered FFRDCs located within these States.

[3] Includes R&D activities of university-administered FFRDCs located within these States.

KEY: GSP = Gross State product
FFRDC = Federally Funded Research and Development Center

SOURCE: National Science Foundation/Division of Science Resources Studies, *National Patterns of R&D Resources*, annual series. GSP data are from the Department of Commerce/Bureau of Economic Analysis.

* These ranks do not account for sampling errors in the level of industrial R&D performance in each State.

Table 3. Total R&D and GSP by State: 1997

Rank in total R&D	State	Total R&D	GSP	R&D/GSP	R&D/GSP	U.S. R&D	U.S. R&D
		(In millions of dollars)		Percent	Rank	Percent	Cumulative percent
	Total, U.S.	211,268					
1	California	41,670	1,033,016	4.03	9	19.72	19.72
2	Michigan	13,991	272,607	5.13	3	6.62	26.35
3	New York	12,307	651,652	1.89	25	5.83	32.17
4	New Jersey	12,067	294,055	4.10	8	5.71	37.88
5	Massachusetts	11,097	221,009	5.02	4	5.25	43.14
6	Texas	9,487	601,643	1.58	28	4.49	47.63
7	Pennsylvania	8,209	339,940	2.41	15	3.89	51.51
8	Illinois	8,034	393,532	2.04	21	3.80	55.31
9	Washington	7,543	172,253	4.38	6	3.57	58.88
10	Maryland	7,395	153,797	4.81	5	3.50	62.39
11	Ohio	7,145	320,506	2.23	17	3.38	65.77
12	Florida	4,784	380,607	1.26	31	2.26	68.03
13	North Carolina	4,667	218,888	2.13	18	2.21	70.24
14	Virginia	4,136	211,331	1.96	23	1.96	72.20
15	Minnesota	3,605	149,394	2.41	16	1.71	73.90
16	Connecticut	3,454	134,565	2.57	12	1.63	75.54
17	Colorado	3,205	126,064	2.54	13	1.52	77.06
18	Indiana	3,149	161,701	1.95	24	1.49	78.55
19	New Mexico	3,028	45,242	6.69	1	1.43	79.98
20	District of Columbia	2,768	52,372	5.29	2	1.31	81.29
21	Arizona	2,410	121,239	1.99	22	1.14	82.43
22	Georgia	2,272	229,473	0.99	38	1.08	83.51
23	Wisconsin	2,256	147,325	1.53	30	1.07	84.57
24	Missouri	1,826	152,100	1.20	33	0.86	85.44
25	Alabama	1,637	103,109	1.59	27	0.77	86.21
26	Tennessee	1,566	146,999	1.07	36	0.74	86.95
27	Oregon	1,520	98,367	1.54	29	0.72	87.67
28	Utah	1,381	55,417	2.49	14	0.65	88.33
29	Kansas	1,351	71,737	1.88	26	0.64	88.97
30	Idaho	1,270	29,149	4.36	7	0.60	89.57
31	Delaware	1,089	31,585	3.45	11	0.52	90.08
32	Rhode Island	1,040	27,806	3.74	10	0.49	90.58
33	South Carolina	1,040	93,259	1.11	35	0.49	91.07
34	Iowa	980	80,479	1.22	32	0.46	91.53
35	New Hampshire	799	38,106	2.10	19	0.38	91.91
36	Oklahoma	644	76,642	0.84	40	0.30	92.21
37	Louisiana	554	124,350	0.45	50	0.26	92.48
38	Kentucky	526	100,076	0.53	46	0.25	92.73
39	Nevada	517	57,407	0.90	39	0.24	92.97
40	West Virginia	427	38,228	1.12	34	0.20	93.17
41	Mississippi	370	58,314	0.63	43	0.17	93.35
42	Vermont	314	15,214	2.06	20	0.15	93.50
43	Nebraska	275	48,812	0.56	44	0.13	93.63
44	Hawaii	275	38,024	0.72	42	0.13	93.76

See explanatory information and SOURCE at end of table.

Table 3. Total R&D and GSP by State: 1997

Rank in total R&D	State	Total R&D	GSP	R&D/GSP	R&D/GSP	U.S. R&D	U.S. R&D
		(In millions of dollars)		Percent	Rank	Percent	Cumulative percent
45	Arkansas	272	58,479	0.46	49	0.13	93.88
46	Montana	199	19,160	1.04	37	0.09	93.98
47	Maine	149	30,156	0.49	48	0.07	94.05
48	Alaska	136	24,494	0.55	45	0.06	94.11
49	North Dakota	116	15,786	0.73	41	0.05	94.17
50	Wyoming	87	17,561	0.50	47	0.04	94.21
51	South Dakota	71	20,186	0.35	51	0.03	94.24
	Other/unknown[1]	12,161				5.76	100.00

[1] The "other/unknown" category includes R&D performed within the 50 States, or the District of Columbia, but where the specific location of such performance was not provided by survey respondents. It also includes R&D conducted by organizations within the United States, but where actual performance does not take place in a particular State or the District of Columbia, e.g., research conducted on marine vessels, and research in Puerto Rico. Finally, it also includes a small accounting difference due to the total for the U.S. being based on calendar year data, while data by State pertain to the fiscal year for non-industrial performance.

KEY: GSP = Gross State product

SOURCES: National Science Foundation/Division of Science Resources Studies, derived from *Research and Development in Industry: 1997*; *Academic Research and Development Expenditures: Fiscal Year 1997*; *Federal Funds for Research and Development: Fiscal Years 1997, 1998, and 1999*; and Department of Commerce, Bureau of Economic Analysis.

administrative offices within the National Capital area. Alabama, Florida, and New Mexico rank among the highest in Federal R&D because of their relatively high shares of Federal space- and defense-related R&D.

Ten-Year State R&D Trends

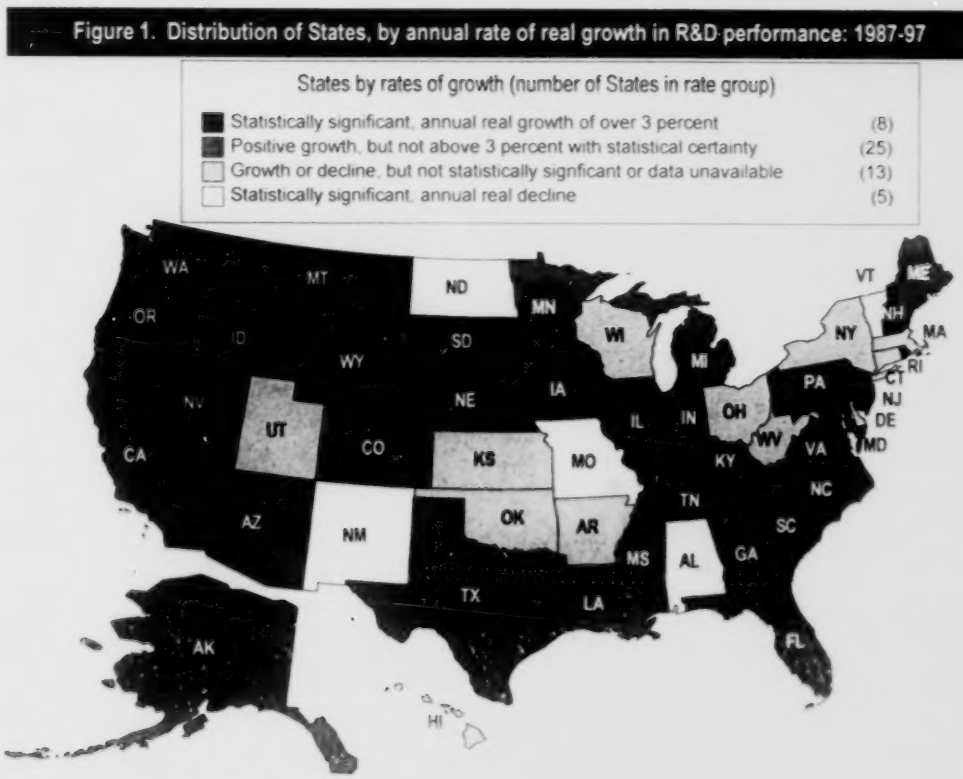
States have varied widely in their rates of R&D growth in recent years. For example, the average annual change in real R&D (adjusted for inflation) between 1987 and 1997 ranged from a growth of 14 percent for New Hampshire to a decline of 6 percent for Alabama. Real R&D growth for the nation as a whole averaged two percent per year over the same period.

Because of the variability of estimates for many areas smaller than the U.S. total when data are acquired through survey sampling, the growth rates in R&D performance observed for some States are not precise enough for comparative use. Nevertheless, several useful observations can be made regarding cases in which there is sufficient statistical precision.

As shown in figure 1, among the 51 regions examined, eight States were found to have statistically significant, real annual growth rates of over 3 percent between 1987 and 1997: Idaho, Montana, Nevada, New Hampshire, Oregon, Rhode Island, South Dakota, and Washington. Twenty-five other States had rates of real R&D growth that were positive with statistical certainty, but could not be said to be above 3 percent with statistical certainty. Another 13 States had growth or declines in real R&D, but which were not statistically different from no change in real R&D. Finally, five States had statistically signficant declines in real R&D: Alabama, Missouri, New Mexico, North Dakota, and Vermont.

Among the top 10 States in R&D expenditures in 1997, Washington had the highest growth rate—5 percent. The next highest growth rate among the top 10 was 3 percent for New Jersey; California's R&D grew at a rate of 2 percent during the 1987-97 period – the same rate as that of the Nation as a whole.

Figure 1. Distribution of States, by annual rate of real growth in R&D performance: 1987-97



NOTE: Growth rates for Delaware and the District of Columbia were not available.

SOURCES: National Science Foundation/Division of Science Resources Studies, *Academic Research and Development Expenditures: Fiscal Year 1997*, *Federal Funds for Research and Development Fiscal Years 1997, 1998, and 1999*, and *Research and Development in Industry: 1997*.

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In most cases, these differences in rates reflect the sharp decline in Federal R&D support and the simultaneous dramatic rise in industrial R&D support that occurred during the period. For example, much of Alabama's decline in R&D could be attributed to a drop in Federal support for industrial R&D: over the decade, this support dwindled from $900 million (in current dollars) to $189 million.[5] In New Hampshire, on the other hand, the sharp rise in R&D is due primarily to an increase in industrial R&D performance (which is funded predominantly by industry) from $94 million to $652 million.

For States that have relatively small levels of R&D expenditures (e.g., States that are not among the top 10 in R&D), these growth rates tend to be influenced significantly by particular events, such as an individual company or government agency expanding or contracting its R&D activities. Therefore, caution should be used in interpreting differences among States. Variations in rates may not reflect differences among States in their policies toward R&D; specific circumstances (other than State policy) may have been more responsible for the observed differences. Likewise, one should not assume that the rates observed between 1987 and 1997 will necessarily continue in later years.

Historical Data on R&D by State and Performing Sector

Table 4 provides the same data as table 1 on State-level R&D by performer and source, but for all odd-numbered years between 1987 and 1995. Only odd-numbered years are included because the industry survey did not acquire State-level data in even-numbered years. These data may be useful for detailed analysis of changes in the composition of R&D within a State over time, but the user should use caution in recognizing that small changes may be due to sampling error. Only current dollars are provided, so that these numbers would not need to be adjusted with each new revision in the values of GDP deflators. However, because these values are in current dollars, any observed change in R&D on the basis of these values alone would also include the effect of inflation. In the analysis of ten-year growth trends, provided above, these levels of R&D expenditures had been converted to constant dollars, which allowed for measures of real growth in R&D between 1987 and 1997.

[5] These Federal R&D totals are based on reports by the performers of R&D and not by the Federal funding agencies. For detailed historical data on R&D expenditures by State and performer from 1987-95, see table 4.

Ratio of R&D to Gross State Product

States vary widely in the size of their economies, owing to differences in population, land area, infrastructure, natural resources, and history. Consequently, variations in the R&D expenditure levels of States may simply reflect differences in economic size or the nature of their R&D efforts. A simple way of controlling for the size effect is to measure each State's R&D level as a proportion of its gross State product (GSP). That proportion is referred to as R&D "intensity" or "concentration."

The Nation's total R&D to gross domestic product ratio was 2.6 percent in 1997. The top 10 States for R&D intensity in 1997 were—in descending order—New Mexico (6.7 percent), the District of Columbia, Michigan, Massachusetts, Maryland, Washington, Idaho, New Jersey, California, and Rhode Island (the last with an intensity of 3.7 percent). New Mexico's high R&D intensity is largely attributable to Federal (specifically Department of Energy) support of FFRDCs in the State.

Figure 2 illustrates the geographical distribution of States by R&D as a percentage of GSP. As shown, R&D concentration is relatively high in the Northeast and East North Central regions, with the exceptions of Maine, New York, and Wisconsin, which had R&D/GSP ratios below 1.9 percent. R&D concentration is relatively low in the West North Central and Southern regions, with the exceptions of Minnesota, North Carolina, and Virginia, which have R&D/GSP ratios above 1.9.

The Mountain and Pacific regions are quite mixed in R&D concentration. In the former region, New Mexico and Idaho have the highest R&D/GSP ratios, which are above 4.0; Wyoming and Nevada have estimated ratios below 1.0. Similarly, in the Pacific, California and Washington's ratios are 4.0 or higher, while the ratios for Alaska and Hawaii fall below 1.0.

Industrial R&D by State

States have always varied in terms of the levels and types of industrial operations they contain. Thus, they vary as well in the levels of R&D they contain by industrial sector. One measure of such variation among States is the extent to which their industrial R&D is in the nonmanufacturing sector, as opposed to the manufacturing sector. Among the top 10 States in 1997 industrial R&D performance, California, New Jersey, New York,

Table 4. State distribution of expenditures for R&D: perform

Performing sector		Total R&D	Federal Govt	Industry			
Funding sector		Total R&D	Federal Govt	Total	Federal Govt	Industry[2]	To
Location	Year[1]						
Alabama	1987	2,349,977	584,230	1,592,000	900,000	692,000	19
Alabama	1989	1,232,429	568,243	428,000	213,000	215,000	21
Alabama	1991	1,510,827	700,617	521,000	221,000	300,000	25
Alabama	1993	1,967,533	833,137	833,000	406,000	427,000	28
Alabama	1995	1,680,828	642,257	686,000	273,000	413,000	33
Alabama	1997	1,636,645	660,047	589,000	189,000	399,000	36
Alaska	1987	90,429	32,840	10,000	D	D	4
Alaska	1989	117,914	51,176	9,000	D	D	5
Alaska	1991	146,091	58,705	18,000	D	D	6
Alaska	1993	129,211	47,833	14,000	D	D	6
Alaska	1995	163,396	60,545	30,000	D	D	7
Alaska	1997	135,745	38,381	24,000	D	D	7
Arizona	1987	1,144,261	83,236	845,000	178,000	667,000	18
Arizona	1989	1,293,340	118,284	917,000	220,000	697,000	22
Arizona	1991	1,399,709	102,341	944,000	199,000	745,000	25
Arizona	1993	1,607,378	206,067	1,042,000	298,000	744,000	31
Arizona	1995	1,967,119	169,700	1,356,000	620,000	736,000	39
Arizona	1997	2,419,843	140,601	1,864,000	677,000	1,177,000	37
Arkansas	1987	195,660	24,196	135,000	D	D	3
Arkansas	1989	120,875	25,071	51,000	D	D	4
Arkansas	1991	198,271	35,160	106,000	D	D	5
Arkansas	1993	301,143	40,657	185,000	D	D	7
Arkansas	1995	329,500	57,563	181,000	D	D	8
Arkansas	1997	271,703	49,469	118,000	D	D	10
California	1987	25,520,939	2,011,033	19,475,000	10,963,000	8,512,000	1,54
California	1989	30,885,676	2,478,100	23,675,000	12,857,000	10,818,000	1,89
California	1991	28,346,287	1,885,275	21,279,000	8,911,000	12,368,000	2,14
California	1993	33,721,294	1,785,138	26,541,000	7,463,000	19,078,000	2,39
California	1995	36,133,144	1,843,729	28,710,000	6,925,000	21,785,000	2,58
California	1997	41,669,723	1,464,133	34,011,000	5,977,000	28,034,000	2,93

See explanatory information and SOURCE at end of table

nance by sector, categorized by sources of funds: 1987–97

	U&Cs					U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
tal	Federal Govt	Non-fed Govt	Industry	U&Cs	Nonprofits	Federal Govt.[2]	Federal Govt.[3]	Federal Govt.[4]
(In thousands of current dollars)								
2,925	85,382	16,449	10,916	29,919	10,259	0	20,822	0
5,836	119,693	18,339	16,242	45,106	16,456	0	20,350	0
2,998	132,063	27,267	20,348	52,667	20,653	0	36,212	0
1,209	161,331	26,991	23,729	48,358	20,800	0	20,187	0
4,689	190,330	6,991	29,164	86,664	21,540	0	17,882	0
8,602	230,864	5,251	29,685	84,747	18,025	0	18,996	0
7,432	21,523	2,999	3,024	17,960	1,926	0	157	0
6,701	26,659	2,101	3,039	21,869	3,033	0	1,035	0
7,432	34,335	1,926	1,547	28,246	1,378	0	1,954	0
6,796	41,616	3,012	4,751	17,412	5	0	582	0
2,216	37,285	5,607	5,470	23,850	4	0	635	0
0,943	28,127	3,964	12,769	26,082	1	0	2,421	0
1,263	80,955	8,965	17,456	61,644	12,243	26,000	8,782	0
3,834	105,367	7,949	12,500	86,076	11,942	27,600	6,622	0
4,128	131,627	7,945	19,519	109,028	16,009	27,400	10,840	0
0,721	149,803	6,333	18,889	112,596	23,100	40,000	8,590	0
0,216	210,475	8,080	23,238	126,380	12,043	75,005	6,198	0
6,818	198,097	10,266	18,584	137,165	12,706	29,058	6,366	0
5,529	12,257	9,352	2,829	8,028	3,063	0	935	0
3,676	14,213	12,166	4,123	9,521	3,633	0	1,128	0
5,081	20,178	13,958	4,514	12,945	3,486	0	2,010	0
4,011	25,362	23,666	6,767	14,774	3,442	0	1,475	0
7,799	33,348	23,779	7,693	19,717	3,262	0	3,138	0
2,204	35,021	29,227	7,570	23,985	6,401	0	2,030	0
4,787	1,066,099	36,570	72,260	289,604	90,254	2,097,000	383,119	0
0,062	1,285,165	43,546	83,218	321,615	116,518	2,385,300	252,148	245,066
6,235	1,436,542	84,176	86,265	389,156	150,096	2,562,800	326,127	146,850
0,144	1,629,545	112,454	99,291	367,857	170,997	2,499,000	338,161	177,851
4,280	1,796,691	107,055	120,080	372,941	197,513	2,377,815	361,960	245,360
8,575	2,028,296	128,617	160,304	439,942	221,416	2,549,108	473,915	202,992

Table 4. State distribution of expenditures for R&D: performan

Performing sector		Total R&D	Federal Govt.	Industry			
Funding sector		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[2]	Total
Location	Year						(I
Colorado	1987	1,704,333	132,807	1,261,000	282,000	979,000	185,6
Colorado	1989	1,648,885	116,787	1,162,000	251,000	911,000	226,5
Colorado	1991	NA	275,312	D	D	1,751,000	260,5
Colorado	1993	2,864,058	169,821	2,111,000	252,000	1,859,000	331,0
Colorado	1995	2,603,149	167,869	1,865,000	274,000	1,591,000	393,8
Colorado	1997	3,205,211	195,364	2,248,000	525,000	1,723,000	427,4
Connecticut	1987	2,471,219	17,719	2,216,000	632,000	1,584,000	230,7
Connecticut	1989	2,744,751	37,810	2,410,000	680,000	1,730,000	284,4
Connecticut	1991	1,917,105	46,602	1,535,000	504,000	1,031,000	320,9
Connecticut	1993	2,808,827	52,905	2,373,000	419,000	1,954,000	364,7
Connecticut	1995	4,310,652	17,690	3,906,000	389,000	3,517,000	377,2
Connecticut	1997	3,454,151	32,731	3,014,000	307,000	2,707,000	392,5
Delaware	1987	NA	2,874	D	D	D	31,6
Delaware	1989	NA	3,133	D	D	D	37,1
Delaware	1991	NA	8,605	D	D	D	44,6
Delaware	1993	1,248,672	12,053	1,181,000	24,000	1,157,000	52,6
Delaware	1995	1,148,632	15,477	1,077,000	12,000	1,065,000	53,1
Delaware	1997	1,088,697	10,207	1,009,000	8,000	1,001,000	65,0
District of Columbia	1987	NA	1,208,569	D	D	D	85,4
District of Columbia	1989	NA	1,521,715	D	D	23,000	111,3
District of Columbia	1991	1,736,670	1,432,998	40,000	16,000	24,000	118,3
District of Columbia	1993	2,543,172	1,712,811	540,000	21,000	519,000	145,2
District of Columbia	1995	3,128,187	2,106,208	672,000	17,000	656,000	181,4
District of Columbia	1997	2,767,902	1,732,539	645,000	D	D	214,0
Florida	1987	3,136,347	719,058	2,133,000	892,000	1,241,000	278,8
Florida	1989	3,374,947	642,074	2,341,000	1,167,000	1,174,000	385,5
Florida	1991	3,699,966	657,605	2,599,000	934,000	1,665,000	438,0
Florida	1993	3,525,284	607,692	2,425,000	970,000	1,455,000	488,5
Florida	1995	5,222,709	554,440	4,101,000	1,634,000	2,467,000	559,1
Florida	1997	4,783,893	649,376	3,442,000	1,461,000	1,981,000	681,5

See explanatory information and SOURCE at end of table.

nce by sector, categorized by sources of funds: 1987–97

	U&Cs					U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
	Federal Govt	Non-fed Govt	Industry	U&Cs	Nonprofits	Federal Govt.[1]	Federal Govt.[2]	Federal Govt.[3]
n thousands of current dollars)								
99	136,003	8,771	8,728	17,682	14,515	52,000	72,827	0
55	167,043	10,679	14,381	17,735	16,717	63,300	29,354	50,889
87	187,819	12,905	16,481	23,078	20,304	78,300	33,718	72,558
81	222,107	18,026	23,651	41,797	25,500	99,000	41,852	111,304
09	260,247	21,998	24,470	51,690	35,404	125,310	46,418	4,743
35	289,514	26,833	23,756	50,422	36,910	135,980	50,078	148,354
90	155,717	2,495	9,298	39,761	23,519	0	6,710	0
10	187,212	5,430	11,630	56,999	23,139	0	12,531	0
35	197,120	5,996	16,121	73,778	27,920	0	14,568	0
08	220,562	10,067	18,351	80,829	34,899	0	18,214	0
25	227,915	18,732	20,327	78,243	32,008	0	9,737	0
68	242,385	13,730	25,387	76,391	34,775	0	14,752	0
81	13,662	1,995	3,659	10,117	2,248	0	2,647	0
94	17,083	2,603	4,073	11,125	2,310	0	2,110	0
96	20,053	4,024	4,732	12,724	3,163	0	2,883	0
27	26,170	3,710	4,857	13,937	3,953	0	2,992	0
61	27,352	2,144	3,681	14,560	5,424	0	2,994	0
95	32,031	2,977	3,361	20,125	6,601	0	4,395	0
70	62,968	484	4,192	11,642	6,184	0	100,959	0
25	84,274	480	7,924	13,022	5,625	0	136,744	0
98	86,793	463	7,279	12,718	11,145	0	145,274	0
18	100,345	1,038	10,313	18,346	15,176	0	144,543	600
61	132,770	814	13,297	19,937	14,643	0	168,518	0
19	153,846	1,267	18,381	24,092	16,433	0	175,954	390
47	129,474	13,889	20,334	98,188	16,962	0	5,442	0
56	200,742	25,655	20,660	112,906	25,593	0	6,317	0
54	220,683	36,736	35,690	116,339	28,606	0	5,307	0
51	267,717	31,641	40,565	119,937	28,691	0	4,041	0
04	317,081	41,466	36,382	135,110	29,065	0	8,165	0
08	333,828	89,003	48,304	176,142	34,231	0	11,009	0

Table 4. State distribution of expenditures for R&D: performa

Performing sector		Total R&D	Federal Govt.	Industry			
Funding sector		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[2]	Total
Location	Year						(N
Georgia	1987	1,430,455	96,266	1,001,000	D	D	331,0
Georgia	1989	1,309,760	157,925	719,000	D	D	424,4
Georgia	1991	1,478,861	121,008	868,000	89,000	779,000	484,0
Georgia	1993	1,577,360	159,002	860,000	63,000	797,000	546,9
Georgia	1995	2,112,474	272,178	1,175,000	142,000	1,031,000	657,5
Georgia	1997	2,271,517	225,150	1,273,000	212,000	1,062,000	766,3
Hawaii	1987	158,274	23,218	73,000	54,000	19,000	57,3
Hawaii	1989	123,204	36,400	9,000	2,000	7,000	70,7
Hawaii	1991	144,656	44,537	11,000	D	D	78,1
Hawaii	1993	380,150	41,703	255,000	D	D	73,9
Hawaii	1995	169,252	62,303	14,000	D	D	78,4
Hawaii	1997	274,632	54,318	87,000	55,000	32,000	120,1
Idaho	1987	528,396	15,342	488,000	386,000	102,000	24,3
Idaho	1989	NA	18,785	D	D	161,000	33,1
Idaho	1991	NA	36,666	D	D	D	41,4
Idaho	1993	477,563	37,396	391,000	D	D	48,7
Idaho	1995	913,961	27,792	827,000	D	D	58,6
Idaho	1997	1,269,685	24,092	1,181,000	D	D	64,2
Illinois	1987	5,337,890	72,532	4,284,000	940,000	3,344,000	498,2
Illinois	1989	5,305,752	59,321	4,050,000	D	D	602,5
Illinois	1991	6,413,236	68,151	5,027,000	190,000	4,837,000	697,5
Illinois	1993	6,777,207	83,136	5,242,000	236,000	5,006,000	757,5
Illinois	1995	7,486,236	80,626	5,776,000	146,000	5,630,000	817,6
Illinois	1997	8,033,737	77,224	6,248,000	163,000	6,085,000	929,6
Indiana	1987	2,197,318	64,245	1,944,000	353,000	1,591,000	188,0
Indiana	1989	2,120,117	74,520	1,815,000	D	D	227,2
Indiana	1991	2,346,791	92,036	1,988,000	226,000	1,762,000	262,5
Indiana	1993	2,560,252	77,330	2,177,000	D	D	302,6
Indiana	1995	3,162,376	62,061	2,721,000	382,000	2,339,000	375,3
Indiana	1997	3,149,259	68,272	2,677,000	D	D	400,1

See explanatory information and SOURCE at end of table

nce by sector, categorized by sources of funds: 1987–97

	U&Cs					U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
	Federal Govt.	Non-fed. Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
n thousands of current dollars)								
000	151,367	39,621	34,196	95,827	9,989	0	2,189	0
424	210,248	40,141	35,635	126,231	12,169	0	8,411	0
019	238,664	43,222	40,010	149,645	12,478	0	5,834	0
960	273,079	39,325	51,968	167,509	15,079	0	11,398	0
630	302,390	53,611	55,018	221,785	24,726	0	7,766	0
346	347,407	68,844	73,284	252,398	24,413	0	7,021	0
345	34,472	19,317	261	2,591	704	0	4,711	0
733	40,574	24,759	799	3,686	915	0	7,071	0
166	44,857	27,321	856	3,391	1,741	0	10,953	0
961	41,362	27,099	151	3,109	2,240	0	9,486	0
429	44,238	26,789	299	3,738	3,365	0	14,520	0
107	72,421	28,440	5,944	13,297	5	0	13,207	0
779	8,988	8,314	2,899	4,436	142	0	275	0
191	12,585	8,112	4,199	8,148	147	0	531	0
437	15,681	8,604	5,050	11,697	405	0	777	0
774	17,026	12,550	7,286	11,068	844	0	393	0
521	19,710	13,615	7,408	16,350	1,538	0	548	0
278	18,103	21,752	9,151	14,802	470	0	315	0
221	293,929	30,610	23,791	117,826	32,065	444,000	39,137	0
558	338,082	33,881	38,990	150,694	40,911	528,400	65,473	0
565	361,461	52,573	49,583	177,424	56,524	573,500	47,020	0
508	424,745	45,716	44,745	178,026	64,276	649,000	45,563	0
640	467,952	46,903	43,048	195,052	64,685	770,554	41,416	0
639	529,803	53,968	50,156	220,259	75,453	724,565	54,309	0
086	111,413	15,772	17,203	37,627	6,071	0	987	0
266	136,040	18,911	18,419	43,658	10,238	0	3,331	0
508	143,761	20,347	19,726	61,425	17,249	0	4,247	0
811	167,743	20,552	22,535	65,991	25,990	0	3,111	0
719	197,095	22,463	34,542	101,283	20,336	0	3,596	0
399	209,227	23,826	33,321	113,903	20,122	0	3,588	0

Table 4. State distribution of expenditures for R&D: performa

Performing sector		Total R&D	Federal Govt.	Industry			
Funding sector		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[1]	Tota
Location	Year						
[illegible]	1987	540,156	20,217	343,000	D	D	157
[illegible]	1989	616,408	20,447	363,000	D	D	209
[illegible]	1991	777,130	26,977	461,000	D	D	259
[illegible]	1993	902,050	30,424	533,000	D	D	298
[illegible]	1995	1,391,006	37,257	996,000	D	D	322
[illegible]	1997	979,747	29,043	578,000	D	D	341
Kansas	1987	1,282,752	9,073	1,179,000	D	D	93
Kansas	1989	522,687	9,034	404,000	94,000	310,000	107
Kansas	1991	NA	11,961	D	D	D	124
Kansas	1993	463,570	12,198	292,000	47,000	245,000	154
Kansas	1995	763,702	12,296	569,000	D	D	181
Kansas	1997	1,350,536	15,622	1,136,000	D	D	197
Kentucky	1987	353,868	26,692	249,000	D	D	78
Kentucky	1989	343,099	31,159	226,000	D	226,000	83
Kentucky	1991	316,616	62,279	154,000	D	D	97
Kentucky	1993	428,684	15,728	289,000	7,000	282,000	122
Kentucky	1995	593,797	5,911	452,000	4,000	448,000	134
Kentucky	1997	525,613	7,289	359,000	3,000	356,000	158
Louisiana	1987	317,932	34,619	134,000	D	D	148
Louisiana	1989	385,930	36,410	168,000	D	D	180
Louisiana	1991	453,098	43,104	172,000	16,000	156,000	235
Louisiana	1993	469,705	42,557	170,000	D	D	255
Louisiana	1995	422,967	45,108	61,000	D	D	314
Louisiana	1997	564,255	47,910	172,000	D	D	330
Maine	1987	76,367	5,493	41,000	D	41,000	16
Maine	1989	72,733	4,394	33,000	D	33,000	19
Maine	1991	NA	13,862	D	D	D	27
Maine	1993	113,937	13,003	59,000	D	D	24
Maine	1995	345,449	4,238	286,000	D	D	31
Maine	1997	148,620	5,685	83,000	D	D	33

See explanatory information and SOURCE at end of table.

	U&Cs					U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
l	Federal Govt	Non-fed. Govt	Industry	U&Cs	Nonprofits	Federal Govt.[1]	Federal Govt.[2]	Federal Govt.[4]
(In thousands of current dollars)								
539	76,915	16,653	5,212	49,668	8,091	19,000	400	0
394	103,360	24,839	14,711	60,863	5,621	21,800	1,767	0
437	123,858	34,147	14,372	74,471	12,589	26,400	3,316	0
745	145,006	38,216	17,907	80,919	16,695	37,000	2,881	0
769	163,620	47,279	19,391	77,793	14,686	31,925	1,054	0
772	162,060	52,713	24,226	83,880	18,893	27,680	3,252	0
931	37,386	20,031	5,433	27,607	3,474	0	748	0
856	44,292	24,159	5,187	30,204	4,014	0	1,797	0
174	43,913	28,967	7,292	39,897	4,105	0	5,219	0
103	59,635	36,640	7,527	44,215	6,086	0	5,269	0
496	70,026	39,353	11,434	52,517	8,166	0	910	0
586	75,116	45,002	11,907	56,752	8,809	0	1,328	0
008	30,778	10,841	6,715	26,545	3,129	0	168	0
998	32,963	7,113	7,516	30,593	5,813	0	1,942	0
989	38,386	6,122	10,569	38,008	4,904	0	2,348	0
409	55,698	6,198	13,575	42,013	4,925	0	1,547	0
784	59,811	9,589	16,627	43,883	4,874	0	1,102	0
238	75,649	7,394	20,016	53,122	2,057	0	1,086	0
563	54,367	31,850	7,154	42,639	12,553	0	750	0
032	69,219	40,758	8,193	47,129	14,733	0	1,488	0
726	98,360	62,167	15,678	44,184	14,837	0	2,268	0
171	95,891	64,306	16,508	61,267	17,199	0	1,977	0
996	135,838	71,898	21,317	66,446	19,497	0	1,863	0
131	128,017	74,861	32,231	78,094	16,926	0	4,214	0
952	7,787	315	2,051	5,740	1,059	0	12,922	0
974	8,288	564	4,002	6,567	533	0	15,365	0
082	10,062	2,197	4,719	9,504	600	0	16,456	0
879	8,959	1,711	4,117	9,674	416	0	17,055	0
901	15,789	2,005	4,158	9,357	592	0	23,310	0
144	15,066	1,551	5,609	10,526	392	0	26,791	0

Table 4. State distribution of expenditures for R&D: perfo

Performing sector		Total R&D	Federal Govt.	Industry		
Funding sector		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[1]
Location	Year					
Maryland	1987	4,623,170	2,507,828	1,350,000	608,000	742,000
Maryland	1989	4,972,713	2,915,566	1,088,000	552,000	536,000
Maryland	1991	5,736,048	3,332,276	1,203,000	666,000	537,000
Maryland	1993	7,530,401	4,116,718	2,076,000	1,287,000	789,000
Maryland	1995	6,865,287	4,472,415	1,075,000	287,000	788,000
Maryland	1997	7,395,409	4,569,181	1,425,000	456,000	970,000
Massachusetts	1987	7,773,057	575,855	5,492,000	1,468,000	4,024,000
Massachusetts	1989	7,948,303	401,091	5,825,000	1,691,000	4,134,000
Massachusetts	1991	8,565,279	277,787	6,335,000	1,480,000	4,855,000
Massachusetts	1993	9,497,975	383,885	6,952,000	1,878,000	5,074,000
Massachusetts	1995	9,969,508	315,749	7,416,000	1,458,000	5,958,000
Massachusetts	1997	11,096,958	361,118	8,300,000	1,397,000	6,903,000
Michigan	1987	7,919,304	87,364	7,415,000	115,000	7,300,000
Michigan	1989	9,058,245	71,349	8,468,000	99,000	8,369,000
Michigan	1991	8,850,565	91,833	8,116,000	89,000	8,027,000
Michigan	1993	10,777,535	95,717	9,924,000	153,000	9,771,000
Michigan	1995	13,274,875	82,008	12,388,000	148,000	12,240,000
Michigan	1997	13,990,795	107,749	13,009,000	121,000	12,888,000
Minnesota	1987	2,529,453	26,388	2,242,000	D	D
Minnesota	1989	2,398,568	31,036	2,066,000	D	D
Minnesota	1991	2,227,672	40,468	1,810,000	150,000	1,660,000
Minnesota	1993	2,922,121	40,129	2,458,000	378,000	2,080,000
Minnesota	1995	3,087,438	30,139	2,636,000	315,000	2,321,000
Minnesota	1997	3,605,461	34,573	3,116,000	362,000	2,754,000
Mississippi	1987	236,427	127,489	44,000	D	D
Mississippi	1989	268,090	130,448	56,000	D	D
Mississippi	1991	302,380	157,156	41,000	D	D
Mississippi	1993	324,189	162,622	52,000	D	D
Mississippi	1995	314,710	132,616	66,000	D	D
Mississippi	1997	369,557	165,297	73,000	D	D

See explanatory information and SOURCE at end of table.

ormance by sector, categorized by sources of funds: 1987–97

Total	U&Cs					U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
	Federal Govt	Non-fed Govt	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
(in thousands of current dollars)								
723,915	576,698	50,425	25,803	59,733	11,256	0	41,427	0
900,007	705,292	61,216	35,556	74,426	23,517	0	68,533	585
1,050,023	787,317	79,047	39,832	113,214	30,613	0	149,107	1,642
1,128,066	842,053	90,237	47,604	115,976	32,196	0	204,180	5,437
1,159,866	894,585	75,759	55,111	84,508	49,903	0	156,442	1,564
1,242,151	927,015	81,381	40,098	114,075	79,582	0	154,995	4,082
719,581	536,999	18,390	64,806	37,790	61,596	354,000	631,621	0
867,521	621,789	18,529	78,727	58,681	89,795	364,100	419,725	70,866
953,708	680,168	13,090	90,390	71,025	99,035	389,000	433,698	176,086
1,105,791	771,864	15,462	98,270	91,877	128,318	355,000	525,805	175,494
1,147,150	824,826	13,240	89,409	92,116	127,559	344,657	587,363	158,589
1,268,356	915,187	29,248	102,848	124,784	96,289	352,591	652,158	162,735
396,580	207,729	30,320	25,146	103,830	29,555	0	20,360	0
487,192	263,506	35,983	36,310	116,135	35,258	0	31,704	0
601,189	309,592	42,539	43,684	152,841	52,533	0	41,543	0
699,957	377,278	39,541	47,390	172,114	63,634	0	57,861	0
755,089	417,755	48,961	50,629	180,866	56,878	0	49,778	0
842,303	453,776	50,749	57,149	205,580	75,049	0	31,743	0
222,381	109,003	37,287	11,056	39,371	25,664	0	38,684	0
258,614	132,880	42,542	12,389	43,713	27,090	0	42,918	0
331,471	164,887	53,614	19,270	60,904	32,796	0	45,733	0
332,033	174,716	49,861	21,524	64,840	21,092	0	91,959	0
339,524	194,819	49,543	23,427	46,235	22,500	0	84,775	0
363,095	200,149	50,539	24,196	53,731	34,480	0	91,783	0
59,882	24,532	16,775	4,282	8,897	5,396	0	5,056	0
78,922	35,747	20,493	5,439	9,670	7,573	0	2,720	0
100,383	52,853	20,886	8,892	12,132	5,620	0	3,841	0
105,739	54,715	21,836	9,824	10,960	8,404	0	3,828	0
112,789	62,597	23,778	8,912	11,211	6,291	0	3,305	0
124,601	62,350	29,324	9,169	13,623	10,135	0	6,659	0

Table 4. State distribution of expenditures for R&D: per

Performing sector		Total R&D	Federal Govt.	Industry		
Funding sector		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[1]
Location	Year					
Missouri	1987	2,171,482	46,007	1,905,000	D	D
Missouri	1989	2,709,978	58,176	2,380,000	D	D
Missouri	1991	NA	71,220	D	D	D
Missouri	1993	1,788,896	51,288	1,375,000	D	D
Missouri	1995	2,498,360	55,445	2,028,000	564,000	1,443,000
Missouri	1997	1,826,338	50,526	1,290,000	30,000	1,260,000
Montana	1987	54,381	17,763	7,000	0	7,000
Montana	1989	NA	20,877	D	D	5,000
Montana	1991	NA	26,133	D	D	D
Montana	1993	90,438	27,075	14,000	D	D
Montana	1995	119,109	33,553	17,000	D	D
Montana	1997	199,351	33,199	92,000	D	D
Nebraska	1987	160,209	21,899	62,000	D	D
Nebraska	1989	161,706	22,074	64,000	D	D
Nebraska	1991	210,756	21,920	59,000	7,000	52,000
Nebraska	1993	294,531	24,730	128,000	14,000	114,000
Nebraska	1995	335,930	23,132	150,000	D	D
Nebraska	1997	275,359	23,741	71,000	D	D
Nevada	1987	167,996	76,509	57,000	D	D
Nevada	1989	152,642	77,198	29,000	D	D
Nevada	1991	261,232	108,614	83,000	63,000	20,000
Nevada	1993	218,503	71,044	67,000	D	D
Nevada	1995	445,028	34,669	322,000	D	D
Nevada	1997	516,544	46,025	380,000	D	D
New Hampshire	1987	164,130	19,006	94,000	D	D
New Hampshire	1989	NA	21,510	D	D	95,000
New Hampshire	1991	NA	88,342	D	D	102,000
New Hampshire	1993	438,620	85,839	248,000	D	D
New Hampshire	1995	597,697	30,902	472,000	36,000	436,000
New Hampshire	1997	798,601	36,861	652,000	D	D

See explanatory information and SOURCE at end of table.

formance by sector, categorized by sources of funds: 1987–97

U&Cs						U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Total	Federal Govt	Non-fed Govt	Industry	U&Cs	Nonprofits	Federal Govt [1]	Federal Govt [1]	Federal Govt [1]
(In thousands of current dollars)								
205.597	113.146	11.753	19.325	49.579	11.794	0	14.878	0
255.009	139.677	14.509	25.151	59.615	16.057	0	16.793	0
305.780	165.099	19.061	30.195	67.335	24.090	0	22.217	0
344.566	190.959	18.959	31.492	78.490	24.666	0	18.042	0
397.192	212.750	21.486	36.639	92.974	33.343	0	17.723	0
464.809	260.668	24.101	36.669	111.305	32.066	0	21.003	0
29.425	11.299	7.325	3.197	7.604	0	0	193	0
32.450	11.552	7.919	3.242	9.534	203	0	1.077	0
38.149	13.801	8.884	4.406	10.820	238	0	1.340	0
48.080	21.399	9.029	3.234	14.011	407	0	1.283	0
66.879	27.382	12.914	5.825	20.172	586	0	1.677	0
70.591	31.261	14.368	8.470	15.684	808	0	3.561	0
74.468	33.275	16.123	6.664	14.893	3.513	0	1.842	0
93.506	36.761	22.926	9.098	20.676	4.045	0	2.126	0
123.711	40.597	35.817	7.845	34.780	4.672	0	6.125	0
135.737	38.023	39.576	8.891	36.406	12.841	0	6.064	0
157.044	54.746	42.331	10.933	45.536	3.498	0	5.754	0
175.592	60.388	47.089	13.686	49.290	5.139	0	5.026	0
34.254	18.563	1.973	3.963	8.805	930	0	233	0
45.555	26.587	2.682	4.296	10.396	1.594	0	889	0
66.742	38.221	2.608	5.323	19.675	915	0	2.676	0
79.124	43.196	4.361	5.245	25.193	1.129	0	1.335	0
86.902	47.708	6.460	6.941	24.798	995	0	1.457	0
88.331	43.934	4.411	5.464	30.749	3.773	0	2.188	0
50.928	34.633	2.045	2.081	8.114	4.055	0	196	0
62.172	41.816	2.646	2.951	9.333	5.426	0	97	0
78.975	52.833	4.375	3.997	10.225	7.545	0	330	0
99.475	67.727	5.846	4.842	11.768	9.292	0	2.306	0
93.073	60.131	3.963	3.919	12.948	12.112	0	1.722	0
107.505	67.282	7.990	4.880	15.058	12.295	0	2.235	0

Table 4. State distribution of expenditures for R&D: perf

Performing sector		Total R&D	Federal Govt	Industry			
Funding sector		Total R&D	Federal Govt	Total	Federal Govt	Industry[1]	
Location	Year						
New Jersey	1987	6,724,917	255,275	6,141,000	457,000	5,684,000	
New Jersey	1989	7,228,887	429,755	6,381,000	601,000	5,780,000	
New Jersey	1991	8,777,671	512,928	7,810,000	855,000	6,955,000	
New Jersey	1993	9,180,997	509,310	8,162,000	378,000	7,784,000	
New Jersey	1995	9,128,185	343,667	8,200,000	197,000	8,002,000	
New Jersey	1997	12,067,086	459,286	11,069,000	117,000	10,952,000	
New Mexico	1987	2,392,370	420,821	993,000	905,000	87,000	
New Mexico	1989	2,679,324	593,878	1,034,000	D	D	
New Mexico	1991	2,589,385	392,967	1,064,000	1,001,000	63,000	
New Mexico	1993	2,751,608	503,783	962,000	D	D	
New Mexico	1995	3,295,475	481,047	1,461,000	1,380,000	81,000	
New Mexico	1997	3,027,688	366,253	1,310,000	D	D	
New York	1987	8,185,452	160,073	6,559,000	3,426,000	13,904,000	
New York	1989	9,877,995	89,334	8,071,000	1,480,000	6,591,000	
New York	1991	10,315,493	173,988	8,268,000	1,558,000	6,710,000	
New York	1993	10,973,876	131,440	8,820,000	1,392,000	7,428,000	
New York	1995	10,954,561	117,250	8,651,000	1,821,000	6,831,000	
New York	1997	12,306,752	136,215	9,939,000	2,078,000	7,861,000	
North Carolina	1987	2,212,322	129,508	1,741,000	5,000	1,736,000	
North Carolina	1989	1,820,827	59,738	1,305,000	5,000	1,300,000	
North Carolina	1991	1,965,076	150,956	1,285,000	4,000	1,281,000	
North Carolina	1993	2,745,087	174,294	1,929,000	16,000	1,913,000	
North Carolina	1995	3,191,790	220,179	2,226,000	15,000	2,212,000	
North Carolina	1997	4,667,017	229,610	3,590,000	111,000	3,478,000	
North Dakota	1987	116,487	20,343	60,000	D	D	
North Dakota	1989	75,833	20,217	27,000	D	27,000	
North Dakota	1991	NA	23,938	D	D	D	
North Dakota	1993	91,534	27,220	9,000	D	D	
North Dakota	1995	97,606	25,042	12,000	D	D	
North Dakota	1997	115,946	26,401	33,000	0	33,000	

See explanatory information and SOURCE at end of table

U&Cs						U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Total	Federal Govt	Non-fed Govt	Industry	U&Cs	Nonprofits	Federal Govt.[1]	Federal Govt.[2]	Federal Govt.[2]
(In thousands of current dollars)								
214,696	95,294	37,489	11,780	55,142	14,991	107,000	6,946	0
283,897	119,237	45,150	16,428	82,798	20,284	112,600	21,635	0
352,310	150,044	43,361	19,502	114,157	25,246	90,800	11,528	105
373,816	166,835	36,361	26,115	116,307	28,198	116,000	11,876	7,995
443,371	208,934	39,535	25,861	135,607	33,434	125,685	11,332	4,130
462,052	224,084	37,274	26,186	139,540	34,968	59,146	15,641	1,961
132,145	75,923	17,908	20,123	14,187	4,004	835,000	11,404	0
136,189	76,777	14,612	16,433	17,860	10,507	902,400	4,857	8,000
170,139	94,309	15,467	19,530	28,762	12,071	947,600	7,241	7,438
186,750	113,060	13,998	18,743	28,507	12,442	1,084,000	6,762	8,313
230,393	156,554	17,298	10,696	38,562	7,283	1,109,400	6,218	7,417
219,150	144,639	14,954	9,915	42,442	7,200	1,121,670	10,362	253
1,108,478	758,040	53,349	62,173	126,931	107,985	221,000	136,901	0
1,311,643	854,137	68,474	70,598	170,970	147,464	255,200	150,818	0
1,419,765	918,063	75,490	85,282	190,624	150,306	283,900	169,570	270
1,544,702	1,052,171	75,571	87,804	180,217	148,939	293,000	184,734	0
1,702,414	1,107,468	95,941	98,200	206,258	194,547	281,148	202,749	0
1,783,810	1,151,542	80,142	95,778	245,093	211,255	239,052	208,675	0
313,819	195,177	54,897	23,825	25,757	14,163	0	27,995	0
419,848	261,896	61,259	41,375	41,222	14,096	0	36,241	0
501,841	303,921	71,990	55,079	51,758	19,093	0	27,279	0
604,581	377,983	74,041	69,950	63,862	18,745	0	37,212	0
686,609	431,682	97,647	74,086	61,857	21,337	0	59,002	0
785,980	439,124	115,804	96,116	105,767	29,169	0	61,427	0
35,912	15,385	13,731	3,578	2,391	827	0	232	0
27,951	19,396	916	2,521	4,113	1,003	0	665	0
48,930	21,570	1,327	2,308	22,336	1,389	0	1,231	0
54,175	25,223	1,532	2,173	23,595	1,652	0	1,139	0
59,617	27,841	1,534	3,346	25,043	1,853	0	947	0
56,096	24,207	1,070	3,439	25,554	1,826	0	449	0

Table 4. State distribution of expenditures for R&D: perfor

Performing sector		Total R&D	Federal Govt.	Industry			
Funding sector		Total R&D	Federal Govt.	Total	Federal Govt.	Industry	T
Location	Year						
Ohio	1987	4,934,310	991,290	3,569,000	2,206,000	2,807,000	3
Ohio	1989	5,474,881	1,055,523	3,946,000	681,000	3,265,000	4
Ohio	1991	5,975,241	688,926	4,726,000	778,000	3,948,000	5
Ohio	1993	6,397,650	583,033	5,144,000	1,030,000	4,114,000	5
Ohio	1995	5,314,554	599,044	4,001,000	574,000	3,428,000	4
Ohio	1997	7,144,779	681,170	5,606,000	604,000	5,004,000	7
Oklahoma	1987	534,354	33,729	384,000	D	D	
Oklahoma	1989	507,700	46,083	332,000	D	D	1
Oklahoma	1991	604,019	40,970	392,000	2,000	390,000	1
Oklahoma	1993	533,398	34,311	311,000	2,000	309,000	1
Oklahoma	1995	529,764	45,104	288,000	38,000	249,000	1
Oklahoma	1997	643,755	44,238	428,000	45,000	383,000	1
Oregon	1987	475,890	31,517	294,000	D	D	1
Oregon	1989	578,941	42,199	355,000	30,000	325,000	1
Oregon	1991	600,175	47,486	349,000	21,000	321,000	1
Oregon	1993	773,855	50,795	471,000	32,000	439,000	2
Oregon	1995	1,088,654	55,959	741,000	35,000	706,000	2
Oregon	1997	1,519,732	90,017	1,102,000	28,000	1,075,000	2
Pennsylvania	1987	5,633,446	284,237	4,630,000	1,380,000	3,250,000	6
Pennsylvania	1989	5,790,920	274,016	4,632,000	1,907,000	2,725,000	7
Pennsylvania	1991	7,620,947	315,003	6,262,000	2,060,000	4,202,000	8
Pennsylvania	1993	8,277,907	353,951	6,711,000	1,142,000	5,569,000	1,0
Pennsylvania	1995	6,918,955	227,520	5,331,000	376,000	4,955,000	1,1
Pennsylvania	1997	8,209,081	151,216	6,609,000	672,000	5,937,000	1,2
Rhode Island	1987	553,281	239,969	234,000	D	D	
Rhode Island	1989	428,168	195,920	139,000	D	D	
Rhode Island	1991	484,693	226,367	152,000	11,000	141,000	
Rhode Island	1993	484,236	184,784	176,000	12,000	164,000	1
Rhode Island	1995	896,570	254,302	520,000	D	D	1
Rhode Island	1997	1,040,290	202,192	704,000	D	D	1

See explanatory information and SOURCE at end of table

	U&Cs					U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Total	Federal Govt	Non-fed. Govt	Industry	U&Cs	Nonprofits	Federal Govt	Federal Govt[1]	Federal Govt[1]
(In thousands of current dollars)								
29,344	193,615	35,038	22,265	47,189	31,237	0	44,676	0
27,345	242,559	46,072	37,591	62,068	37,055	0	46,013	0
03,725	284,791	53,079	37,948	73,765	54,142	0	56,590	0
63,542	348,166	46,038	47,781	89,146	62,411	0	77,075	0
42,596	375,061	47,690	54,316	106,701	58,828	0	71,914	0
63,827	417,921	70,078	82,653	143,890	49,285	0	91,787	0
59,363	25,880	3,463	7,078	57,472	5,470	0	17,262	0
13,279	33,067	5,062	5,667	60,063	9,420	0	16,338	0
52,624	42,806	13,593	8,559	74,265	13,401	0	18,425	0
72,968	56,475	22,399	10,320	67,338	16,436	0	15,119	0
86,371	59,504	19,699	11,453	79,107	16,608	0	9,289	0
62,871	71,421	18,944	14,036	45,309	13,161	0	8,646	0
35,326	81,932	18,645	4,059	16,007	14,683	0	15,047	0
61,215	99,141	20,860	4,857	16,717	19,640	0	20,527	0
79,384	106,849	25,727	6,850	21,519	16,439	0	24,305	0
25,750	134,956	29,762	8,578	34,209	18,245	0	26,310	0
58,575	158,076	30,312	11,693	37,453	21,041	0	33,120	0
90,603	195,030	32,335	9,647	35,824	17,767	0	37,112	0
11,935	385,912	23,559	66,246	85,399	50,819	14,000	93,274	0
61,337	468,993	32,466	91,733	109,498	58,647	20,900	102,667	0
78,826	552,239	26,532	100,210	141,865	57,980	27,100	137,865	153
19,006	676,963	20,177	111,569	149,296	61,001	35,000	158,950	0
39,531	754,444	34,954	120,303	164,296	65,534	31,525	189,379	0
41,180	807,553	41,685	139,325	182,835	69,782	32,229	175,456	0
65,516	51,313	2,136	5,380	5,293	1,394	0	13,796	0
79,801	56,446	3,276	6,305	11,646	2,128	0	13,447	0
88,448	59,616	5,278	3,709	17,520	2,325	0	17,878	0
03,194	71,515	2,812	3,212	23,481	2,174	0	20,258	0
05,501	72,461	3,225	2,479	25,644	1,692	0	16,767	0
11,977	79,417	1,161	1,995	26,545	2,859	0	22,121	0

Table 4. State distribution of expenditures for R&D: perfor

Performing sector		Total R&D	Federal Govt	Industry			
Funding sector		Total R&D	Federal Govt	Total	Federal Govt	Industry	
Location	Year						
South Carolina	1987	640,738	11,527	523,000	D	D	
South Carolina	1989	575,597	59,660	386,000	D	D	
South Carolina	1991	594,444	13,955	419,000	D	D	
South Carolina	1993	713,450	38,208	495,000	D	D	
South Carolina	1995	996,261	34,441	739,000	D	D	
South Carolina	1997	1,039,818	34,019	783,000	83,000	700,000	
South Dakota	1987	21,311	5,685	4,000	0	4,000	
South Dakota	1989	22,274	5,563	4,000	0	4,000	
South Dakota	1991	32,297	9,470	5,000	0	5,000	
South Dakota	1993	58,634	13,236	22,000	D	D	
South Dakota	1995	54,667	13,428	19,000	0	19,000	
South Dakota	1997	71,366	19,307	26,000	0	26,000	
Tennessee	1987	960,871	125,890	649,000	D	D	
Tennessee	1989	1,294,796	135,383	930,000	D	D	
Tennessee	1991	1,142,486	123,708	737,000	D	D	
Tennessee	1993	1,212,807	86,547	792,000	D	D	
Tennessee	1995	1,402,742	62,100	1,003,000	D	D	
Tennessee	1997	1,566,151	77,836	1,089,000	D	D	
Texas	1987	5,454,724	340,803	4,261,000	1,784,000	2,477,000	
Texas	1989	6,561,710	464,111	5,028,000	1,848,000	3,180,000	1,6
Texas	1991	6,635,249	405,267	4,755,000	D	D	1,4
Texas	1993	6,965,939	467,760	4,882,000	640,000	4,242,000	1,5
Texas	1995	8,384,504	537,508	6,211,000	912,000	5,298,000	1,4
Texas	1997	9,487,282	559,634	7,265,000	784,000	6,481,000	1,5
Utah	1987	1,031,253	99,166	809,000	D	D	
Utah	1989	620,604	66,414	387,000	D	D	
Utah	1991	664,474	103,269	356,000	51,000	305,000	
Utah	1993	751,165	140,556	411,000	51,000	360,000	
Utah	1995	1,144,080	131,138	803,000	178,000	625,000	
Utah	1997	1,381,073	117,231	1,027,000	199,000	829,000	

See explanatory information and SOURCE at end of table

Total	U&Cs					U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
	Federal Govt.	Non-fed Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[5]	Federal Govt.[4]
(In thousands of current dollars)								
95,811	34,350	14,061	6,184	37,110	4,106	0	10,400	0
120,137	41,627	17,421	7,906	44,864	8,319	0	9,800	0
151,204	54,045	16,858	15,903	54,011	10,387	0	10,285	0
178,174	73,020	16,057	14,242	52,850	22,005	0	2,068	0
220,088	109,443	17,899	19,364	53,994	19,388	0	2,732	0
219,000	102,887	20,697	8,682	65,914	20,820	0	3,799	0
11,395	5,129	4,789	472	739	266	0	231	0
12,449	6,166	4,905	316	840	222	0	262	0
15,959	6,917	6,539	310	1,520	673	0	1,868	0
22,196	9,100	9,686	486	2,140	784	0	1,202	0
21,392	10,623	6,772	469	2,341	1,187	0	847	0
24,558	10,879	8,341	811	3,043	1,484	0	1,500	0
155,163	84,030	28,035	11,757	24,124	7,217	9,000	11,818	0
207,471	127,627	31,365	10,367	28,221	9,891	7,800	14,142	0
243,763	150,274	32,927	12,359	34,772	13,431	10,400	27,515	100
277,686	180,177	31,255	15,743	34,150	16,361	11,000	45,574	0
308,155	191,797	35,395	16,345	45,116	19,502	9,612	19,875	0
329,710	198,805	37,911	17,430	52,844	22,720	44,022	25,583	0
809,781	403,285	92,020	46,903	168,648	98,925	0	43,140	0
014,305	488,137	123,805	63,575	210,128	128,660	0	75,294	0
215,548	550,558	139,019	79,964	283,850	162,157	2,300	257,134	0
387,085	682,785	157,954	89,554	292,807	163,988	5,000	224,091	0
472,165	747,687	158,886	102,486	296,606	166,500	0	163,001	860
581,200	844,746	170,457	132,352	269,793	163,852	0	80,394	1,054
120,878	81,355	13,412	5,734	16,178	4,199	0	2,209	0
164,828	109,053	17,183	5,503	27,822	5,267	0	2,362	0
201,470	137,613	16,756	6,880	33,779	6,442	0	3,735	0
194,685	136,630	13,075	9,303	27,825	7,852	0	4,924	0
202,212	140,600	15,431	9,456	28,065	8,660	0	7,730	0
234,151	158,237	17,876	14,452	35,822	7,764	0	2,691	0

Table 4. State distribution of expenditures for R&D: perfor

Performing sector		Total R&D	Federal Govt	Industry			
Funding sector		Total R&D	Federal Govt	Total	Federal Govt.[1]	Industry[2]	
Location	Year[3]						
Vermont	1987	282,584	3,710	247,000	0	247,000	
Vermont	1989	NA	4,404	D	D	D	
Vermont	1991	NA	5,122	D	D	D	
Vermont	1993	342,809	5,601	284,000	D	D	
Vermont	1995	308,180	4,702	248,000	D	D	
Vermont	1997	313,881	7,400	246,000	D	D	
Virginia	1987	2,558,458	883,844	1,342,000	1,068,000	274,000	
Virginia	1989	2,555,475	1,017,764	1,126,000	687,000	439,000	
Virginia	1991	2,775,919	1,107,423	1,115,000	679,000	436,000	
Virginia	1993	2,938,617	1,226,598	1,087,000	595,000	492,000	
Virginia	1995	3,897,444	1,580,530	1,577,000	743,000	834,000	
Virginia[4][5]	1997	4,136,004	1,654,696	1,767,000	851,000	916,000	
Washington	1987	3,520,818	122,468	3,071,000	D	D	
Washington	1989	3,224,988	111,220	2,716,000	D	D	
Washington	1991	3,889,660	132,503	3,215,000	D	D	
Washington	1993	5,421,959	113,263	4,689,000	891,000	3,798,000	
Washington	1995	5,240,679	159,837	4,294,000	D	D	
Washington	1997	7,543,329	167,356	6,610,000	D	D	
West Virginia	1987	187,642	56,605	87,000	D	D	
West Virginia	1989	NA	63,239	D	D	80,000	
West Virginia	1991	NA	76,078	D	D	69,000	
West Virginia	1993	279,583	93,059	100,000	D	D	
West Virginia	1995	475,040	139,595	243,000	D	D	
West Virginia	1997	427,415	86,663	233,000	D	D	
Wisconsin	1987	1,538,985	21,745	1,217,000	36,000	1,181,000	
Wisconsin	1989	1,398,630	26,945	1,030,000	32,000	998,000	
Wisconsin	1991	1,573,365	32,321	1,140,000	24,000	1,116,000	
Wisconsin	1993	1,851,751	38,190	1,343,000	D	D	
Wisconsin	1995	2,226,046	40,344	1,706,000	33,000	1,673,000	
Wisconsin	1997	2,255,616	42,606	1,707,000	29,000	1,678,000	

See explanatory information and SOURCE at end of table

U&Cs						U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Total	Federal Govt	Non-fed-Govt.	Industry	U&Cs	Nonprofits	Federal Govt [3]	Federal Govt [4]	Federal Govt. [4]
(In thousands of current dollars)								
31.547	22.289	1.805	2.877	3.330	1.246	0	327	0
42.743	28.535	2.500	3.486	5.485	2.737	0	2.639	0
46.541	30.860	2.859	4.181	6.395	2.246	0	4.543	0
49.839	31.530	2.666	4.573	8.253	2.817	0	3.369	0
54.065	32.932	2.454	5.467	9.519	3.693	0	1.413	0
59.526	34.042	2.683	5.399	11.465	5.937	0	955	0
207.934	116.137	36.400	15.895	29.841	9.661	0	124.680	0
278.065	146.712	49.501	21.953	45.348	14.551	13.200	45.489	74.967
342.476	183.798	51.474	31.899	52.857	22.448	28.600	42.826	139.594
403.201	226.130	46.108	35.822	69.479	25.662	35.000	53.272	133.546
446.776	261.604	46.814	45.897	64.379	28.082	74.015	41.651	177.472
454.525	269.821	46.804	39.826	73.777	24.297	79.647	36.922	143.214
235.927	166.458	5.561	21.183	33.623	9.102	0	91.423	0
276.885	205.150	6.063	21.393	36.126	8.153	0	60.549	60.334
349.667	253.381	11.351	28.107	45.229	11.599	0	72.156	120.334
427.763	312.497	13.693	33.506	52.301	15.766	0	75.104	116.829
485.970	340.327	13.761	39.429	77.212	15.241	0	95.900	204.972
507.659	365.814	14.645	40.882	69.433	16.685	0	114.787	143.527
26.704	13.011	871	884	10.736	1.202	17.000	333	0
39.368	17.339	1.255	3.963	15.081	1.730	18.400	2.098	0
50.772	20.479	1.564	11.170	13.191	4.368	21.900	4.985	0
55.021	31.662	2.004	3.973	14.132	3.250	28.000	3.503	0
53.399	30.464	2.023	3.160	13.470	4.282	33.047	5.999	0
63.638	29.623	2.413	3.719	23.190	4.693	33.172	10.942	0
297.411	170.235	49.800	11.446	42.017	23.913	0	2.829	0
336.815	197.818	55.372	16.268	43.304	24.053	0	4.870	0
387.621	217.590	64.386	18.715	52.522	34.408	0	13.423	0
444.192	255.195	68.410	18.698	53.725	48.164	0	26.369	0
472.982	270.622	42.549	16.873	92.115	50.823	0	6.720	0
497.289	283.701	41.073	19.075	97.873	55.567	0	8.721	0

Table 4. State distribution of expenditures for R&D: perfor

Performing sector		Total R&D	Federal Govt.	Industry			
Funding sector		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[2]	T
Location	Year[3]						
Wyoming	1987	35,803	8,146	4,000	0	4,000	
Wyoming	1989	NA	8,519	D	D	D	
Wyoming	1991	41,037	9,339	2,000	0	2,000	
Wyoming	1993	62,907	10,068	15,000	D	D	
Wyoming	1995	86,767	8,669	25,000	D	D	
Wyoming	1997	86,942	8,720	28,000	0	28,000	

[1] Includes performance at industry FFRDCs.

[2] Industry sources of industry R&D expenditures include all non-federal sources of industry R&D expenditures.

[3] Includes total R&D expenditures of FFRDCs administered by academic institutions.

[4] Other sources of support for nonprofit institutions were unavailable.

Industry R&D data are in reference to calendar years; other R&D data are in reference to fiscal years but may serve

KEY: FFRDCs = Federally Funded Research and Development Centers
U&Cs = Universities and colleges
NA = Not available
D = Data withheld to avoid disclosing operations of individual companies, or because of imputation

SOURCE: National Science Foundation/Division of Science Resources Studies, *National Patterns of R&D Resource*

mance by sector, categorized by sources of funds: 1987–97

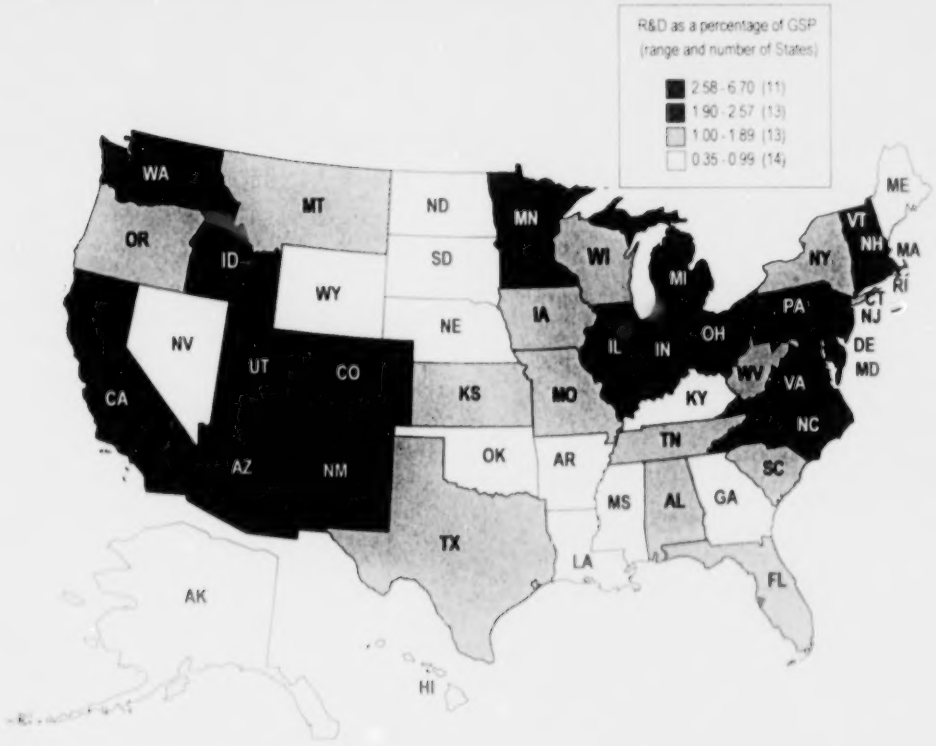
Total	U&Cs					U&C - FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
	Federal Govt.	Non-fed Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
(In thousands of current dollars)								
17,316	8,701	1,129	1,216	6,176	94	0	6,341	0
23,310	13,804	1,539	1,535	6,226	206	0	20,858	0
23,009	12,782	1,848	2,000	6,140	239	0	5,689	0
32,556	14,575	4,111	2,268	10,637	965	0	5,283	0
40,470	15,373	3,125	1,930	17,454	2,588	0	12,628	0
47,753	15,003	5,990	2,226	23,743	791	0	2,469	0

e as approximations to calendar year data

ns of more than 50 percent

es: annual series

Figure 2. Distribution of States, by R&D as a percentage of GSP: 1997



NOTE GSP = Gross State Product

SOURCES National Science Foundation/Division of Science Resources Studies, *National Patterns of R&D Resources*, annual series; and U.S. Department of Commerce, Bureau of Economic Analysis.

Massachusetts, and Washington all had relatively high levels of R&D in the nonmanufacturing sector (25 percent or more of the total) (figure 3). Lower levels of R&D in nonmanufacturing, as a percentage of the total, were observed for Michigan, Texas, Pennsylvania, Illinois, and Ohio. The particular areas of nonmanufacturing with the highest levels of R&D were trade, business services, and engineering and management services.

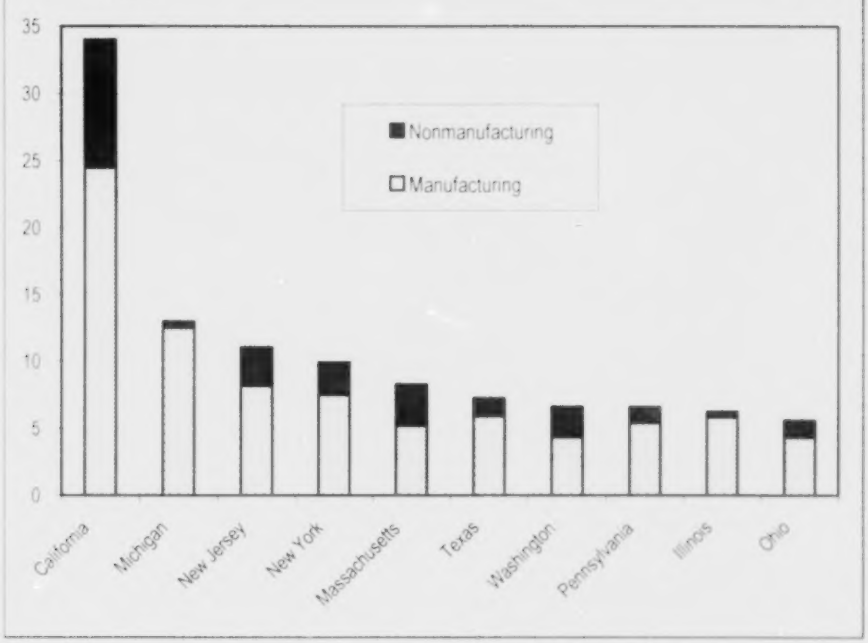
With regard to R&D in manufacturing, States varied widely in terms of which types of industries performed the most R&D (table 5). In California, particularly high levels of R&D performance in 1997 are observed in the following sectors: machinery ($5.8 billion), electrical equipment ($7.5 billion), transportation equipment ($4.2 billion), and professional and scientific instruments ($3.8 billion). In Michigan, as would be expected, the vast majority of R&D in manufacturing occurred in the transportation equipment sector ($9.6 billion of the State's total of $12.5 billion devoted to R&D in manufacturing). In New Jersey, chemicals accounted for the State's highest level of R&D performance ($3.5 billion), followed by electrical equipment ($1.5 billion) and professional and scientific instruments ($1.2 billion). In New York, machinery accounted for the highest amount of R&D performed ($1.5 billion); in Massachusetts it was professional and scientific instruments ($1.8 billion); and in Texas it was electrical equipment ($2.8 billion). In Pennsylvania, chemicals had the largest R&D performance ($2.4 billion), while electrical equipment had the highest levels in Illinois and Ohio.

Federal Support for R&D

The top 10 Federal agencies that fund R&D reported a total of $68 billion in Federal R&D obligations to all types of performers in 1997 (table 6).* The Department of Defense (DoD) and the Department of Health and Human Services (HHS) together provided 69 percent of this total.

California and Maryland were the two largest recipients of these Federal R&D funds. Performers in California, primarily industrial firms, received 24 percent of DoD's R&D support. Maryland received 24 percent

Figure 3. Industrial R&D performance in the top 10 States in industrial R&D in 1997[1]: R&D in manufacturing and nonmanufacturing



[1]These levels include R&D performed by industry-administered FFRDCs.

SOURCE: National Science Foundation/Division of Science Resources Studies, Survey of Industrial Research and Development: 1997

* Data in this section and in table 6 are based on Federal agency reports. See "Technical Note: Differences in performer-reported and source-reported Federal R&D."

Table 5. Total (company, Federal, and other) funds
size of company, for the U.S. and to

Industry	SIC code	U.S. total	California	Michigan	New Jersey
All industries		157,539	34,011	13,009	11,069
Manufacturing		121,025	24,488	12,532	8,180
Food, kindred, and tobacco products	20,21	1,787	39	D	187
Textiles and apparel	22,23	D	D	3	D
Lumber, wood products, and furniture	24,25	348	35	75	37
Paper and allied products	26	D	D	D	D
Chemicals and allied products	28	D	1,674	1,003	3,543
Petroleum refining and extraction	13,29	D	D	D	D
Rubber products	30	D	130	46	21
Stone, clay, and glass products	32	608	10	D	0
Primary metals	33	988	D	28	(S) 25
Fabricated metal products	34	1,798	326	66	14
Machinery	35	18,499	5,818	989	D
Electrical equipment	36	24,585	7,480	D	1,468
Transportation equipment	37	31,993	(S) 4,225	9,623	25
Professional and scientific instruments	38	13,458	3,795	123	1,194
Other manufacturing industries	27,31,39	2,798	626	249	89

See explanatory information and SOURCE at end of table.

for industrial R&D performance, by industry and op 10 R&D-performing States: 1997

	Top 10 States							All other States plus undistributed
	New York	Massa-chusetts	Texas	Wash-ington	Penn-sylvania	Illinois	Ohio	
	(In million of dollars)							
	(S) 9,939	8,300	7,265	(S) 6,610	(S) 6,609	6,248	5,608	48,871
	7,503	5,194	5,912	(S) 4,330	5,396	5,835	4,296	37,358
	40	D	29	D	52	295	39	998
	26	23	(S) 10	0	D	0	D	397
	D	0	1	D	D	3	5	179
	63	24	D	D	17	48	26	1,123
	902	429	453	D	2,388	1,378	981	6,216
	21	D	422	0	56	D	D	393
	65	73	23	D	53	31	(S) 461	480
	D	D	D	0	156	(S) 22	126	98
	(S) 30	D	(S) 65	D	(S) 170	D	99	408
	35	204	28	10	257	83	146	628
	1,485	656	1,153	D	381	716	369	5,618
	727	1,715	(S) 2,805	D	647	2,398	866	6,128
	D	29	D	D	(S) 401	144	722	10,173
	1,265	(S) 1,782	89	180	651	(S) 365	204	3,811
	95	222	128	57	154	239	231	709

Table 5. Total (company, Federal, and other) funds
size of company, for the U.S. and to

Industry	SIC code	U.S. total	California	Michigan	New Jersey
Nonmanufacturing		36,514	9,523	477	2,886
Transportation and utilities	40–42,44–49	3,013	110	D	D
Trade	50–59	D	2,348	D	715
Finance, insurance, and real estate	60–65,67	D	53	D	D
Business services	73	11,960	3,350	S. 201	855
Health services	80	D	37	0	D
Engineering and management services	87	9,290	2,872	195	329
Other services	701,72,75–79, 81,83,84,89	D	302	2	D
Other nonmanufacturing industries	07–12,14,15, 161–162,17	1,618	452	68	34

KEY: D = Data have been withheld to avoid disclosing operations of individual companies.
(S) = Indicates imputation of more than 50 percent

SOURCE: National Science Foundation/Division of Science Resources Studies, Survey of Industrial

s for industrial R&D performance, by industry and
op 10 R&D-performing States: 1997

	Top 10 States							All other States plus undistributed
	New York	Massa-chusetts	Texas	Wash-ington	Penn-sylvania	Illinois	Ohio	
	(In millions of dollars)							
3	2,435	3,106	1,353	2,281	1,212	413	1,311	11,513
0	93	D	D	0	28	14	498	1,101
5	919	1,102	421	31	131	46	71	2,190
0	299	D	D	0	D	91	D	889
5	616	790	530	1,893	227	117	127	3,254
0	D	0	0	D	D	D	0	71
9	393	D	220	315	D	76	462	3,254
0	D	D	0	D	D	D	6	141
4	108	5	D	40	D	49	D	613

Research and Development: 1997

Table 6. Federal R&D obligations, by agency and State: FY 1997

Agency	Total R&D (In millions of dollars)	Largest recipient		Second-largest recipient	
		State	Percent of total	State	Percent of total
Total for the ten agencies listed	68,424	California	20.1	Maryland	10.7
Department of Agriculture	1,378	District of Columbia	11.3	Maryland	9.1
Department of Commerce	1,002	Maryland	33.7	Colorado	8.2
Department of Defense	34,608	California	23.6	Virginia	11.2
Department of Energy	5,601	New Mexico	20.0	California	18.4
Department of Health and Human Resources	12,742	Maryland	23.6	California	10.9
Department of the Interior	558	Virginia	16.7	Colorado	11.8
Department of Transportation	526	District of Columbia	25.1	New Jersey	12.6
Environmental Protection Agency	491	North Carolina	25.5	District of Columbia	12.7
National Aeronautics and Space Administration	9,280	California	28.0	Texas	18.5
National Science Foundation	2,238	California	14.3	New York	8.7

SOURCE: National Science Foundation/Division of Science Resources Studies, *Federal Funds for Research and Development: Fiscal Years 1997, 1998, 1999*.

of HHS's funding, largely supporting intramural activities undertaken at biomedical research facilities at the National Institutes of Health (NIH). California received more R&D funds from both National Aeronautics and Space Administration (NASA) and NSF than any other State. The main recipients in California of NASA R&D funding were FFRDCs (most notably, its Jet Propulsion Laboratory) and industrial firms. The main recipients of NSF funding were universities and colleges. Maryland had the largest share of any one Federal agency's total R&D support, with 34 percent of the Department of Commerce's (DOC) R&D funds. Intramural research activities accounted for most of this funding, associated primarily with DOC's National Institute of Standards and Technology (NIST).

Technical Note: Differences in Performer-Reported and Source-Reported Federal R&D

The NSF collects, and this report contains, two separate estimates on total Federal funding of R&D. Survey data are obtained from both Federal funding agencies and performers of the work (Federal labs, industry, universities, and other nonprofit organizations). National totals, however, are based on data reported by performers because they are in the best position to indicate how much they spent in the actual conduct of R&D in a given year, and to identify the sources of their funds. Performer reporting also reduces the possibility of double-counting and conforms to international standards and guidance.

At certain points in history the two survey systems of sources and performers tracked fairly closely. For example, in calendar year 1980, performers reported using $30.0 billion in Federal R&D funding; Federal agencies reported total R&D obligations for fiscal year 1980 of $29.8 billion. In recent years, the two series have diverged considerably: For calendar year 1997, performers report $65.0 billion in Federal R&D support, compared with the $69.8 billion in obligations reported by Federal agencies for fiscal year 1997 (table 7).[1] The difference in the Federal R&D data totals appears to be concentrated in funding of industry. Overall, in each year since 1989, industrial firms have reported less in Federal R&D support than the amounts that Federal agencies have reported in supporting industrial R&D, even though in some of the earlier years industrial firms had reported more in Federal support than what Federal agencies reported. The difference has been as large as $9.3 billion, observed in 1994. For 1997, Federal agencies reported $31.4 billion in total R&D obligations provided to industrial performers, compared with $23.9 billion in Federal R&D funding reported by industrial performers (table 8). Consequently, data users are cautioned to exercise considerable care in comparing the R&D performance data in table 2 (and detailed in the upper half of the state profiles) with the funding data reported by Federal agencies in table 6 (and detailed in the lower half of the profiles). NSF has been investigating the causes of these divergent trends.

[1] Note that the $68.4 billion in table 6 and in the U.S. total in the State profiles differs from the $69.8 billion amount because State-specific data are collected from just 10 Federal agencies.

Table 7. Difference in agency-reported and performer-reported Federal R&D, all performers: 1978–97

Year	Reported by Federal agencies (by fiscal year)			Performer-reported expenditures (calendar year)
	Authorizations	Obligations	Outlays	
	(In millions of dollars)			
1978	25,976	25,845	24,020	24,468
1979	28,208	28,145	25,838	27,303
1980	29,739	29,830	29,154	30,035
1981	33,735	33,104	32,459	33,714
1982	36,115	36,433	34,391	37,233
1983	38,768	38,712	36,659	41,576
1984	44,214	42,225	39,691	46,571
1985	49,887	48,360	44,171	52,748
1986	53,249	51,412	50,609	54,711
1987	57,069	55,254	51,612	58,548
1988	59,106	56,769	54,739	60,179
1989	62,115	61,406	59,450	60,488
1990	63,781	63,559	62,135	61,668
1991	65,898	61,295	61,130	60,821
1992	68,398	65,593	62,934	60,922
1993	69,884	67,314	65,241	60,524
1994	68,331	67,235	66,151	60,881
1995	68,791	68,187	66,662	63,220
1996	69,049	67,655	66,142	63,547
1997	71,653	69,830	68,897	65,016

SOURCES: National Science Foundation/Division of Science Resources Studies, *Federal Funds Survey, Detailed Historical Tables, Fiscal Years 1951–98; Federal Funds for Research and Development: Fiscal Years 1997, 1998, and 1999; Federal R&D Funding by Budget Function: Fiscal Years 1998-2000;* and *National Patterns of R&D Resources: 1999 Data Update.*

Table 8. Difference in agency-reported and performer-reported Federal R&D: industrial performers by agency source: 1980–97

Year	Industry survey (calendar year)[1]			Federal survey—obligations (fiscal year)[1]			Difference in report totals		
	Total	Department of Defense	Other agencies	Total	Department of Defense	Other agencies	Total	Department of Defense	Other agencies
	(In millions of dollars)								
1980	14,029	NA	NA	14,377	NA	NA	(348)	NA	NA
1981	16,382	10,540	5,842	16,282	10,931	5,351	100	(391)	491
1982	18,545	NA	NA	18,699	NA	NA	(154)	NA	NA
1983	20,680	14,571	6,109	18,521	14,671	3,850	2,159	(100)	2,259
1984	23,396	NA	NA	20,219	NA	NA	3,177	NA	NA
1985	27,196	20,948	6,248	23,496	19,069	4,427	3,700	1,879	1,821
1986	27,891	NA	NA	25,898	NA	NA	1,993	NA	NA
1987	30,752	22,252	8,500	28,628	24,258	4,370	2,124	(2,006)	4,130
1988	30,343	NA	NA	28,631	NA	NA	1,712	NA	NA
1989	28,554	NA	NA	30,604	25,043	5,561	(2,050)	NA	NA
1990	28,125	NA	NA	31,697	NA	NA	(3,572)	NA	NA
1991	26,372	NA	NA	28,589	21,350	7,239	(2,217)	NA	NA
1992	24,722	NA	NA	31,862	NA	NA	(7,140)	NA	NA
1993	22,809	15,044	7,765	31,670	23,856	7,814	(8,861)	(8,812)	(49)
1994	22,463	NA	NA	31,748	NA	NA	(9,285)	NA	NA
1995	23,451	13,876	9,575	31,674	22,645	9,029	(8,223)	(8,769)	546
1996	23,653	NA	NA	31,498	NA	NA	(7,845)	NA	NA
1997	23,928	12,603	11,325	31,418	24,097	7,321	(7,490)	(11,494)	4,004

[1]Includes industry-admininstered federally funded research and development centers (FFRDCs).

KEY: NA = Not available; numbers in parentheses are negative.

NOTES: Data from the Industry Survey are R&D expenditures as reported by performing firms. Data from the Federal Survey are R&D obligations to industry as reported by Federal agencies. The last three columns report the difference between the two data series.

SOURCES: National Science Foundation/Division of Science Resources Studies, *Federal Funds Survey, Detailed Historical Tables, Fiscal Years 1951–98, Federal Funds for Research and Development: Fiscal Years 1997, 1998, and 1999*, and *Research and Development in Industry: 1997*.

DATA SOURCES FOR SCIENCE AND ENGINEERING (S&E) STATE PROFILES

Doctoral scientists and doctoral engineers. National Science Foundation/Division of Science Resources Studies. *Characteristics of Doctoral Scientists and Engineers: 1997* (Early Release Tables), associated with Data Brief NSF 99-340, April 15, 1999 (Arlington, VA, 1999).

S&E doctorates awarded. National Science Foundation/Division of Science Resources Studies. *Science and Engineering Doctorate Awards: 1998*, NSF 00-304 (Arlington, VA, 1999).

S&E postdoctorates and S&E graduate students. National Science Foundation/Division of Science Resources Studies. *Graduate Students and Postdoctorates in Science and Engineering: Fall 1997*, NSF 99-325 (Arlington, VA, 1999), and unpublished tables.

Population. U.S. Department of Commerce, Bureau of the Census. Press release CB 98-242, "Population Growth Accelerates in California, Slows in Rest of the West, Census Bureau Reports" (Washington, D.C., December 1998).

Civilian labor force. U.S. Department of Labor, Bureau of Labor Statistics. *State and Regional Unemployment, 1998 Annual Averages* (news release), USDL 99-46, February 26, 1999.

Personal income per capita. U.S. Department of Commerce, Economics and Statistics Administration, Bureau of Economic Analysis. *Survey of Current Business*, Volume 79 (Washington, D.C., May 1999).

Total Federal Expenditures. U.S. Department of Commerce, Bureau of the Census. *Consolidated Federal Funds Report: 1998 (State and County Areas)* (Washington, D.C., April 1999).

Federal R&D obligations. National Science Foundation/Division of Science Resources Studies. *Federal Funds for Research and Development Fiscal Years 1997, 1998, and 1999*, NSF 99-333 (Arlington, VA, 1999).

Total R&D performance. National Science Foundation/Division of Science Resources Studies. *National Patterns of R&D Resources 1999 Update* associated with Data Brief NSF 99-357, October 4, 1999 (Arlington, VA, 1999).

Industry R&D. National Science Foundation/Division of Science Resources Studies. *Research and Development in Industry: 1997*, NSF 99-358 (Arlington, VA, 1999).

Academic R&D. National Science Foundation/Division of Science Resources Studies. *Academic Research and Development Expenditures: Fiscal Year 1997*, NSF 99-336 (Arlington, VA, 1999).

Higher education current-fund expenditures. U.S. Department of Education, National Center for Education Statistics. *Digest of Education Statistics 1999* (Washington, D.C., 1999).

Number of SBIR awards. U.S. Small Business Administration, Office of Technology. *Small Business Innovation Development Act* (Washington, D.C.). Annual reports covering data for fiscal years 1990-98.

Patents issued to State residents. U.S. Department of Commerce, U.S. Patent and Trademark Office. *Patent Counts by Country/State and Year: Utility Patents 1963-98*, (Washington, D.C., March 1999).

Gross State product. U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Analysis Division (Washington, D.C., June 1999).

Puerto Rico's personal income per capita and gross State product. Puerto Rico Federal Affairs Administration, Office of the Governor, Washington, D.C.

SCIENCE AND ENGINEERING PROFILES

In addition to the state R&D statistics summarized above, the state profiles listed in this report contain other data (from both NSF and non-NSF sources) relating to economic activity within each State in 52 one-page S&E profiles (including ones for the District of Columbia and Puerto Rico). NSF survey indicators include numbers of doctoral scientists and engineers, doctorate degrees awarded by major science and engineering (S&E) field,[8] S&E graduate students and postdoctorates, amounts of Federal R&D obligations by agency and performer, total and industrial R&D expenditures, and academic R&D expenditures by major S&E field. Indicators from non-NSF sources include population, civilian labor force, per capita personal income, total Federal expenditures (not just on R&D), higher education expenditures, patents, small business innovation research (SBIR) awards, and GSP by originating economic sectors. In these profiles, State rankings and totals are provided for the 50 States, the District of Columbia, and Puerto Rico. Because data on total and industrial R&D expenditures are not available for Puerto Rico, rankings for those two variables exclude Puerto Rico.

Of the 17 main indicators ranked by State in the profiles (excluding the rankings in the bottom half of each profile involving Federal R&D obligations by State and performer), California ranked first in each except in personal income per capita, where it ranked 13th. New York ranked second in eight of the indicators and ranked no lower than 8th in the others. Michigan ranked second in total R&D performance and second in industry R&D, but ranked between sixth and twenty-first in the other indicators. Texas ranked between second and seventh in all of the 17 indicators, with the exception of personal income per capita, where it ranked twenty-sixth.

In this report, when States are ranked by a particular statistic, two or more States may have the same value for that statistic. When such ties occur, the tied States are given the same rank, and the next lowest State is given a rank equal to the number of higher ranked States plus one. For example, if two States are tied for 27th place, they both receive a rank of "27," no State is given a rank of "28," and the next lowest State is given a rank of "29."[9]

For many survey statistics used in this report, some fraction of the survey totals could not be allocated to specific geographic regions, or were for U.S. areas other than the 52 listed in this report (e.g., territories). Consequently, U.S. totals reported here may differ from those reported in the underlying surveys.[10] Also, because of rounding, the sum of the gross State product sector percentages may not equal 100 percent.

For some States, reported levels of R&D expenditures and levels of doctoral scientists and engineers are relatively small. For these cases, sampling error in the surveys associated with these statistics may have bearing on the precision of these data, including State rankings. Particular caution in this regard should be used in comparisons among States with low levels of doctoral scientists and doctoral engineers. For example, South Dakota is ranked lowest in doctoral engineers with an estimated number of 103 in the State, and Wyoming is the next to lowest, with 108. However, according to the survey of doctorate recipients from which these data were obtained, any estimate of 100 doctoral engineers is subject to a standard error of 50,

[8] "Environmental Sciences" for S&E doctorate degree data are the sum of earth, atmospheric, and ocean sciences. "Life Sciences" for S&E doctorate degree data were defined as including both biological and agricultural sciences. Medical or health-related data are collected but non-S&E health fields are excluded.

[9] Such ties are only treated as such when there are no numberical differences between any two statistics. Alternatively, ties could have also been identified whenever two numbers differ from each other, but by an amount that is not statistically significant. If this other definition had been applied, then many more ties would have been found.

[10] For two variables—personal income per capita and gross State product—the data sources for Puerto Rico differ from those used to obtain State data.

implying that the difference between these two States for this variable is not statistically significant.[11] For 1,000 doctoral engineers, there is a standard error of 150. For doctoral scientists, the standard error for 100 scientists is 40, and for 1,000 scientists it is 140. Readers should consult with the original sources of these data, as listed below, for additional information on standard errors associated with these and other statistics reported.

For information about *State Science and Engineering Profiles and R&D Patterns: 1997-98*, please contact:

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Research and Development Statistics Program
Division of Science Resources Studies
National Science Foundation
4201 Wilson Boulevard, Suite 965
Arlington, VA 22230

[11] See "Methodological Report of the 1997 Survey of Doctorate Recipients," National Opinion Research Corporation, March 1999.

Alabama

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	6,127	483,162	26	Total R&D performance, 1997 (millions)	$1,637	$199,110	25
Doctoral engineers, 1997[1]	1,325	97,075	23	Industry R&D, 1997 (millions)	$589	$150,329	34
S&E doctorates awarded, 1998[1]	345	27,272	24	Academic R&D, 1997 (millions)	$369	$23,740	22
of which, in life sciences	31%	25%		of which, in life sciences	68%	56%	
in engineering	25%	22%		in engineering	13%	16%	
in psychology	14%	13%		in physical sciences	6%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	388	37,928	25	expenditures, 1996 (millions)	$3,045	$189,626	21
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	596	35,413	17
in doctorate-granting institutions	6,622	424,650	22	Patents issued to State residents, 1998	366	80,287	33
Population, 1998 (000s)	4,352	274,153	23	Gross State product, 1997 (billions)	$103	$8,152	25
Civilian labor force, 1998 (000s)	2,153	139,125	23	of which, agriculture	2%	2%	
				manufacturing, mining, construction	27%	23%	
Personal income per capita, 1998	$21,442	$26,412	41	transportation, communication, utilities	9%	8%	
				wholesale and retail trade	17%	16%	
Federal spending				finance, insurance, real estate	13%	19%	
Total expenditures, 1998 (millions)	$25,297	$1,453,884	19	services	17%	20%	
R&D obligations, 1997 (millions)	$2,214	$68,424	10	government	15%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	2,213,683	660,047	0	1,319,237	214,457	18,996	946	10
Department of Agriculture	16,323	4,749	0	0	11,509	0	65	32
Department of Commerce	1,478	621	0	80	495	282	0	36
Department of Defense	1,295,372	350,480	0	929,554	13,757	1,581	0	7
Department of Energy	34,848	75	0	21,767	12,756	250	0	20
Department of Health & Human Services	149,266	139	0	1,777	132,796	14,533	21	21
Department of Interior	5,126	4,432	0	527	167	0	0	32
Department of Transportation	1,581	0	0	808	0	0	773	31
Environmental Protection Agency	1,733	0	0	0	1,545	188	0	30
National Aeronautics & Space Admin	697,986	299,551	0	364,173	32,327	1,848	87	5
National Science Foundation	9,970	0	0	551	9,105	314	0	39
State rank, total	10	6	na	7	19	21	39	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles"

Alaska

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	1,151	483,162	49	Total R&D performance, 1997 (millions)	$136	$199,110	48
Doctoral engineers, 1997[1]	165	97,075	48	Industry R&D, 1997 (millions)	$24	$150,329	51
S&E doctorates awarded, 1998[1]	32	27,272	51	Academic R&D, 1997 (millions)	$71	$23,740	43
of which, in life sciences	50%	25%		of which, in environmental sciences	44%	6%	
in environmental sciences	22%	3%		in life sciences	26%	56%	
in physical sciences	16%	14%		in physical sciences	19%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund expenditures, 1996 (millions)	$371	$189,626	50
in doctorate-granting institutions	13	37,928	51	Number of SBIR awards, 1990-98	18	35,413	50
S&E graduate students, 1997[1]				Patents issued to State residents, 1998	63	80,287	49
in doctorate-granting institutions	571	424,650	52	Gross State product, 1997 (billions)	$25	$8,152	47
Population, 1998 (000s)	614	274,153	49	of which, agriculture	1%	2%	
Civilian labor force, 1998 (000s)	317	139,125	50	manufacturing, mining, construction	30%	23%	
Personal income per capita, 1998	$25,675	$26,412	21	transportation, communication, utilities	16%	8%	
				wholesale and retail trade	10%	16%	
Federal spending				finance, insurance, real estate	11%	19%	
Total expenditures, 1998 (millions)	$4,767	$1,453,884	47	services	12%	20%	
R&D obligations, 1997 (millions)	$100	$68,424	41	government	20%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Total	Performer: Federal Intramural	Performer: All FFRDCs	Performer: Industrial firms	Performer: Universities & colleges	Performer: Other nonprofits	Performer: State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	99,928	38,381	0	14,893	29,731	2,421	14,502	41
Department of Agriculture	6,989	5,053	0	0	1,891	45	0	43
Department of Commerce	20,280	16,970	0	0	2,860	450	0	12
Department of Defense	28,373	2,257	0	11,973	457	0	13,686	37
Department of Energy	0	0	0	0	0	0	0	na
Department of Health & Human Services	2,600	329	0	15	1,949	0	307	50
Department of Interior	17,656	13,639	0	2,707	1,271	39	0	5
Department of Transportation	515	0	0	6	0	0	509	46
Environmental Protection Agency	80	0	0	0	80	0	0	49
National Aeronautics & Space Admin	14,096	133	0	0	13,182	781	0	27
National Science Foundation	9,339	0	0	192	8,041	1,106	0	42
State rank, total	41	35	na	41	44	42	2	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles"

Arizona

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	5,634	483,162	27	Total R&D performance, 1997 (millions)	$2,410	$199,110	21
Doctoral engineers, 1997	1,816	97,075	16	Industry R&D, 1997 (millions)	$1,854	$150,329	17
S&E doctorates awarded, 1998[1]	486	27,272	18	Academic R&D, 1997 (millions)	$377	$23,740	21
of which, in life sciences	22%	25%		of which, in life sciences	42%	56%	
in engineering	21%	22%		in physical sciences	27%	10%	
in social sciences	17%	15%		in engineering	14%	16%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	446	37,928	24	expenditures, 1996 (millions)	$2,109	$189,626	30
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	614	35,413	16
in doctorate-granting institutions	7,231	424,650	19	Patents issued to State residents, 1998	1,514	80,287	17
Population, 1998 (000s)	4,669	274,153	21	Gross State product, 1997 (billions)	$121	$8,152	24
Civilian labor force, 1998 (000s)	2,272	139,125	21	of which, agriculture	2%	2%	
				manufacturing, mining, construction	21%	23%	
Personal income per capita, 1998	$23,060	$26,412	36	transportation, communication, utilities	7%	8%	
				wholesale and retail trade	17%	16%	
Federal spending				finance, insurance, real estate	19%	19%	
Total expenditures, 1998 (millions)	$24,067	$1,453,884	20	services	21%	20%	
R&D obligations, 1997 (millions)	$732	$68,424	22	government	12%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doc. scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	732,065	143,601	33,264	397,840	148,571	6,366	2,423	22
Department of Agriculture	21,312	13,830	0	6	7,408	56	12	24
Department of Commerce	700	43	0	0	530	0	127	40
Department of Defense	509,668	119,236	0	371,577	18,828	16	11	17
Department of Energy	3,546	0	0	0	3,546	0	0	38
Department of Health & Human Services	71,280	44	0	2,344	63,339	4,262	1,291	28
Department of Interior	6,611	6,332	0	28	251	0	0	24
Department of Transportation	913	0	0	161	216	0	536	38
Environmental Protection Agency	2,150	0	0	597	1,553	0	0	28
National Aeronautics & Space Admin	47,927	4,116	0	21,255	20,349	1,761	446	17
National Science Foundation	67,958	0	33,264	1,872	32,551	271	0	10
State rank, total	22	19	13	17	26	32	26	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

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Arkansas

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	2,296	483,162	40	Total R&D performance, 1997 (millions)	$272	$199,110	45
Doctoral engineers, 1997[1]	336	97,075	43	Industry R&D, 1997 (millions)	$118	$150,329	42
S&E doctorates awarded, 1998[1]	77	27,272	42	Academic R&D, 1997 (millions)	$102	$23,740	40
of which, in life sciences	58%	25%		of which, in life sciences	78%	56%	
in physical sciences	17%	14%		in engineering	9%	16%	
in engineering	14%	22%		in physical sciences	5%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	92	37,928	39	expenditures, 1996 (millions)	$1,303	$189,626	37
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	31	35,413	46
in doctorate-granting institutions	1,453	424,650	44	Patents issued to State residents, 1998	144	80,287	43
Population, 1998 (000s)	2,538	274,153	34	Gross State product, 1997 (billions)	$59	$8,152	32
Civilian labor force, 1998 (000s)	1,215	139,125	34	of which, agriculture	5%	2%	
				manufacturing, mining, construction	29%	23%	
Personal income per capita, 1998	$20,346	$26,412	47	transportation, communication, utilities	10%	8%	
				wholesale and retail trade	17%	16%	
Federal spending				finance, insurance, real estate	12%	19%	
Total expenditures, 1998 (millions)	$13,016	$1,453,884	34	services	15%	20%	
R&D obligations, 1997 (millions)	$96	$68,424	42	government	12%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	95,709	49,469	0	5,782	37,509	2,030	919	42
Department of Agriculture	23,559	11,213	0	0	12,317	5	24	20
Department of Commerce	300	0	0	0	0	0	300	47
Department of Defense	9,313	2,517	0	4,755	2,041	0	0	47
Department of Energy	22	0	0	22	0	0	0	51
Department of Health & Human Services	52,901	31,797	0	898	18,181	2,025	0	30
Department of Interior	4,060	3,942	0	3	115	0	0	37
Department of Transportation	620	0	0	25	0	0	595	42
Environmental Protection Agency	732	0	0	0	732	0	0	38
National Aeronautics & Space Admin.	350	0	0	0	350	0	0	52
National Science Foundation	3,852	0	0	79	3,773	0	0	50
State rank, total	42	30	na	48	41	45	40	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

California

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	62,065	483,162	1	Total R&D performance, 1997 (millions)	$41,670	$199,110	1
Doctoral engineers, 1997[1]	16,845	97,075	1	Industry R&D, 1997 (millions)	$34,011	$150,329	1
S&E doctorates awarded, 1998[1]	3,397	27,272	1	Academic R&D, 1997 (millions)	$2,979	$23,740	1
of which, in engineering	22%	22%		of which, in life sciences	56%	56%	
in life sciences	21%	25%		in engineering	15%	16%	
in psychology	17%	13%		in physical sciences	13%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	6,996	37,928	1	expenditures, 1996 (millions)	$21,514	$189,626	1
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	7,892	35,417	1
in doctorate-granting institutions	43,216	424,650	1	Patents issued to State residents, 1998	15,793	80,267	1
Population, 1998 (000s)	32,667	274,153	1	Gross State product, 1997 (billions)	$1,033	$8,152	1
Civilian labor force, 1998 (000s)	16,329	139,125	1	of which, agriculture	2%	2%	
				manufacturing, mining, construction	18%	23%	
Personal income per capita, 1998	$27,503	$26,412	13	transportation, communication, utilities	7%	8%	
				wholesale and retail trade	16%	16%	
Federal spending				finance, insurance, real estate	23%	19%	
Total expenditures, 1998 (millions)	$161,571	$1,453,884	1	services	23%	20%	
R&D obligations, 1997 (millions)	$13,731	$68,424	1	government	11%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	13,731,238	1,454,133	2,237,895	7,816,020	1,743,099	473,915	6,176	1
Department of Agriculture	77,948	54,422	0	429	22,485	502	110	3
Department of Commerce	72,647	17,104	0	46,744	7,309	1,490	0	3
Department of Defense	8,170,552	1,065,288	244,547	6,608,286	222,249	30,033	149	1
Department of Energy	1,031,311	8,199	858,618	63,580	85,156	15,758	0	2
Department of Health & Human Services	1,391,314	3,928	30,756	74,465	956,680	323,753	1,732	2
Department of Interior	44,704	41,226	0	571	2,518	243	146	3
Department of Transportation	25,372	5,237	0	11,723	3,374	1,467	3,571	6
Environmental Protection Agency	2,291	0	0	0	1,900	391	0	26
National Aeronautics & Space Admin	2,594,307	258,526	1,103,426	985,825	165,692	80,593	245	1
National Science Foundation	320,792	203	548	24,397	275,736	19,685	223	1
State rank, total	1	4	1	1	1	2	8	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles."

Colorado

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	10,488	483,162	16	Total R&D performance, 1997 (millions)	$3,205	$199,110	17
Doctoral engineers, 1997[1]	1,785	97,075	17	Industry R&D, 1997 (millions)	$2,248	$150,329	16
S&E doctorates awarded, 1998[1]	533	27,272	17	Academic R&D, 1997 (millions)	$427	$23,740	18
of which, in engineering	24%	22%		of which, in life sciences	47%	56%	
in life sciences	23%	25%		in engineering	15%	16%	
in physical sciences	14%	14%		in environmental sciences	14%	6%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	893	37,928	13	expenditures, 1996 (millions)	$2,345	$189,626	26
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	1,390	35,413	6
in doctorate-granting institutions	8,839	424,650	14	Patents issued to State residents, 1998	1,750	80,287	14
Population, 1998 (000s)	3,971	274,153	24	Gross State product, 1997 (billions)	$126	$8,152	22
Civilian labor force, 1998 (000s)	2,246	139,125	22	of which, agriculture	2%	2%	
				manufacturing, mining, construction	19%	23%	
Personal income per capita, 1998	$28,657	$26,412	10	transportation, communication, utilities	11%	8%	
				wholesale and retail trade	16%	16%	
Federal spending				finance, insurance, real estate	17%	19%	
Total expenditures, 1998 (millions)	$21,009	$1,453,884	25	services	22%	20%	
R&D obligations, 1997 (millions)	$1,340	$68,424	14	government	13%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

	Performer							
Agency	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	1,340,231	195,364	211,039	608,137	269,276	50,078	6,337	14
Department of Agriculture	31,959	22,257	0	65	8,291	75	1,271	15
Department of Commerce	82,383	73,364	53	1,883	6,583	0	500	2
Department of Defense	574,734	27,363	2,285	528,682	15,434	970	0	16
Department of Energy	165,470	2,465	148,354	3,812	8,670	2,129	40	10
Department of Health & Human Services	177,009	831	0	9,108	130,809	32,769	3,492	17
Department of Interior	66,003	62,880	0	44	2,821	120	138	2
Department of Transportation	10,835	116	0	6,659	68	3,239	753	12
Environmental Protection Agency	10,148	0	0	439	5,318	4,391	0	15
National Aeronautics & Space Admin	112,274	5,470	3,200	52,804	45,171	5,629	0	10
National Science Foundation	109,416	618	57,147	4,641	46,111	756	143	5
State rank, total	14	15	7	13	13	13	6	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

Connecticut

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	8,875	483,162	20	Total R&D performance, 1997 (millions)	$3,454	$199,110	16
Doctoral engineers, 1997[1]	1,049	97,075	28	Industry R&D, 1997 (millions)	$3,014	$150,329	14
S&E doctorates awarded, 1998[1]	434	27,272	22	Academic R&D, 1997 (millions)	$393	$23,740	20
of which, in life sciences	31%	25%		of which, in life sciences	73%	56%	
in social sciences	22%	15%		in engineering	11%	16%	
in physical sciences	15%	14%		in physical sciences	6%	10%	
S&E postdoctorates, 1997[1]				Higher education current fund			
in doctorate-granting institutions	719	37,928	15	expenditures, 1996 (millions)	$2,873	$189,626	23
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	1,065	35,413	11
in doctorate-granting institutions	4,834	424,650	28	Patents issued to State residents, 1998	1,798	80,287	12
Population, 1998 (000s)	3,274	274,153	30	Gross State product, 1997 (billions)	$135	$8,152	21
Civilian labor force, 1998 (000s)	1,709	139,125	28	of which, agriculture	1%	2%	
				manufacturing, mining, construction	20%	23%	
Personal income per capita, 1998	$37,598	$26,412	1	transportation, communication, utilities	6%	8%	
				wholesale and retail trade	14%	16%	
Federal spending				finance, insurance, real estate	29%	19%	
Total expenditures, 1998 (millions)	$19,424	$1,453,884	28	services	22%	20%	
R&D obligations, 1997 (millions)	$846	$68,424	20	government	8%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	846,458	32,731	0	535,620	259,744	14,752	3,611	20
Department of Agriculture	5,807	2,604	0	0	3,203	0	0	45
Department of Commerce	15,925	273	0	13,534	2,118	0	0	15
Department of Defense	448,824	17,648	0	414,772	12,726	3,678	0	18
Department of Energy	64,611	0	0	54,513	10,098	0	0	17
Department of Health & Human Services	227,530	4	0	6,940	208,063	9,636	2,887	14
Department of Interior	2,184	2,037	0	61	86	0	0	47
Department of Transportation	14,799	10,165	0	3,895	106	0	633	7
Environmental Protection Agency	1,405	0	0	217	1,143	45	0	31
National Aeronautics & Space Admin	42,485	0	0	39,641	1,718	1,126	0	18
National Science Foundation	22,888	0	0	2,047	20,483	267	91	25
State rank, total	20	40	na	15	15	23	18	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center. SBIR = small business innovation research. na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

Delaware

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	3,612	483,162	35	Total R&D performance, 1997 (millions)	$1,089	$199,110	31
Doctoral engineers, 1997[1]	786	97,075	32	Industry R&D, 1997 (millions)	$1,009	$150,329	29
S&E doctorates awarded, 1998[1]	111	27,272	39	Academic R&D, 1997 (millions)	$65	$23,740	45
of which, in engineering	28%	22%		of which, in engineering	35%	16%	
in social sciences	19%	15%		in life sciences	20%	56%	
in physical sciences	16%	14%		in environmental sciences	15%	6%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	105	37,928	38	expenditures, 1996 (millions)	$526	$189,626	46
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	124	35,413	30
in doctorate-granting institutions	1,587	424,650	43	Patents issued to State residents, 1998	395	80,287	32
Population, 1998 (000s)	744	274,153	46	Gross State product, 1997 (billions)	$32	$8,152	43
Civilian labor force, 1998 (000s)	392	139,125	47	of which, agriculture	1%	2%	
				manufacturing, mining, construction	23%	23%	
Personal income per capita, 1998	$29,814	$26,412	7	transportation, communication, utilities	5%	8%	
				wholesale and retail trade	10%	16%	
Federal spending				finance, insurance, real estate	39%	19%	
Total expenditures, 1998 (millions)	$3,553	$1,453,884	50	services	14%	20%	
R&D obligations, 1997 (millions)	$49	$68,424	50	government	9%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

	Performer							
Agency	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	48,964	10,207	0	8,777	25,369	4,395	216	50
Department of Agriculture	3,742	971	0	170	2,599	0	2	50
Department of Commerce	1,789	620	0	199	970	0	0	30
Department of Defense	15,074	4,743	0	3,741	6,118	472	0	42
Department of Energy	1,751	0	0	0	1,324	427	0	43
Department of Health & Human Services	7,439	0	0	1,558	5,185	696	0	47
Department of Interior	922	780	0	0	142	0	0	52
Department of Transportation	4,580	3,093	0	1,193	80	0	214	22
Environmental Protection Agency	636	0	0	0	461	175	0	41
National Aeronautics & Space Admin	3,088	0	0	1,543	271	1,274	0	40
National Science Foundation	9,943	0	0	373	8,219	1,351	0	40
State rank, total	50	48	na	44	45	34	52	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center. SBIR = small business innovation research. na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

District of Columbia

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	11,300	483,162	15	Total R&D performance, 1997 (millions)	$2,768	$199,110	20
Doctoral engineers, 1997[1]	924	97,075	29	Industry R&D, 1997 (millions)	$645	$150,329	33
S&E doctorates awarded, 1998[1]	298	27,272	27	Academic R&D, 1997 (millions)	$214	$23,740	31
of which, in social sciences	32%	15%		of which, in life sciences	68%	56%	
in life sciences	18%	25%		in engineering	9%	16%	
in psychology	18%	13%		in physical sciences	9%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	143	37,928	34	expenditures, 1996 (millions)	$2,676	$189,626	24
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	94	35,413	33
in doctorate-granting institutions	8,742	424,650	17	Patents issued to State residents, 1998	74	80,287	47
Population, 1998 (000s)	523	274,153	51	Gross State product, 1997 (billions)	$52	$8,152	36
Civilian labor force, 1998 (000s)	267	139,125	51	of which, agriculture	0%	2%	
				manufacturing, mining, construction	3%	23%	
Personal income per capita, 1998	$37,278	$26,412	2	transportation, communication, utilities	5%	8%	
				wholesale and retail trade	4%	16%	
Federal spending				finance, insurance, real estate	18%	19%	
Total expenditures, 1998 (millions)	$24,034	$1,453,884	21	services	32%	20%	
R&D obligations, 1997 (millions)	$2,232	$68,424	9	government	37%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	2,232,284	1,732,539	390	167,567	155,363	175,954	471	9
Department of Agriculture	156,292	145,849	0	9,168	679	463	133	1
Department of Commerce	18,076	15,992	0	380	807	897	0	13
Department of Defense	1,022,235	859,963	390	106,443	48,337	7,046	56	9
Department of Energy	263,098	245,628	0	2,878	3,418	11,174	0	6
Department of Health & Human Services	195,212	74,440	0	12,589	75,004	33,155	24	16
Department of Interior	2,757	2,509	0	173	25	50	0	46
Department of Transportation	131,979	77,619	0	16,787	11,174	26,141	258	1
Environmental Protection Agency	62,118	51,470	0	465	167	10,016	0	2
National Aeronautics & Space Admin	305,791	255,871	0	13,234	8,088	28,598	0	8
National Science Foundation	74,726	3,198	0	5,450	7,664	58,414	0	9
State rank, total	9	2	20	23	25	4	47	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

Florida

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	13,499	483,162	12	Total R&D performance, 1997 (millions)	$4,784	$199,110	12
Doctoral engineers, 1997[1]	2,816	97,075	12	Industry R&D, 1997 (millions)	$3,442	$150,329	12
S&E doctorates awarded, 1998	997	27,272	9	Academic R&D, 1997 (millions)	$682	$23,740	12
of which, in psychology	28%	13%		of which, in life sciences	56%	56%	
in engineering	19%	22%		in engineering	13%	16%	
in life sciences	18%	25%		in physical sciences	13%	10%	
S&E postdoctorates, 1997				Higher education current-fund			
in doctorate-granting institutions	653	37,928	17	expenditures, 1996 (millions)	$5,515	$189,626	10
S&E graduate students, 1997				Number of SBIR awards, 1990-98	752	35,413	13
in doctorate-granting institutions	17,525	424,650	8	Patents issued to State residents, 1998	2,668	80,287	10
Population, 1998 (000s)	14,916	274,153	4	Gross State product, 1997 (billions)	$381	$8,152	5
Civilian labor force, 1998 (000s)	7,228	139,125	4	of which, agriculture	2%	2%	
				manufacturing, mining, construction	13%	23%	
Personal income per capita, 1998	$25,852	$26,412	20	transportation, communication, utilities	9%	8%	
				wholesale and retail trade	19%	16%	
Federal spending				finance, insurance, real estate	22%	19%	
Total expenditures, 1998 (millions)	$83,558	$1,453,884	4	services	24%	20%	
R&D obligations, 1997 (millions)	$3,326	$68,424	7	government	12%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

	Performer							
Agency	Total	Federal intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[in thousands of dollars]							
Total, all agencies	3,326,418	649,376	0	2,363,556	296,270	11,009	6,207	7
Department of Agriculture	29,869	19,638	0	0	10,216	15	0	17
Department of Commerce	36,926	27,901	0	2,476	6,028	59	462	7
Department of Defense	2,036,881	328,551	0	1,658,565	46,997	568	2,200	5
Department of Energy	65,665	0	0	45,793	19,872	0	0	16
Department of Health & Human Services	143,449	9	0	9,433	128,130	5,745	132	22
Department of Interior	24,874	22,780	0	16	1,917	0	161	4
Department of Transportation	3,880	0	0	372	559	0	2,949	24
Environmental Protection Agency	10,644	7,720	0	362	2,020	542	0	14
National Aeronautics & Space Admin~	908,821	242,777	0	646,120	18,385	1,236	303	4
National Science Foundation	65,409	0	0	419	62,146	2,844	0	11
State rank, total	7	7	na	4	12	25	7	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles."

Georgia

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	9,634	483,162	17	Total R&D performance, 1997 (millions)	$2,272	$199,110	22
Doctoral engineers, 1997[1]	1,397	97,075	20	Industry R&D, 1997 (millions)	$1,273	$150,329	23
S&E doctorates awarded, 1998[1]	616	27,272	15	Academic R&D, 1997 (millions)	$766	$23,740	10
of which, in engineering	29%	22%		of which, in life sciences	50%	56%	
in life sciences	28%	25%		in engineering	26%	16%	
in psychology	14%	13%		in physical sciences	7%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	570	37,928	21	expenditures, 1996 (millions)	$4,860	$189,626	11
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	277	35,413	26
in doctorate-granting institutions	8,837	424,650	15	Patents issued to State residents, 1998	1,290	80,287	20
Population, 1998 (000s)	7,642	274,153	10	Gross State product, 1997 (billions)	$230	$8,152	10
Civilian labor force, 1998 (000s)	4,021	139,125	10	of which, agriculture	2%	2%	
				manufacturing, mining, construction	22%	23%	
Personal income per capita, 1998	$25,020	$26,412	24	transportation, communication, utilities	11%	8%	
				wholesale and retail trade	18%	16%	
Federal spending				finance, insurance, real estate	16%	19%	
Total expenditures, 1998 (millions)	$37,144	$1,453,884	13	services	18%	20%	
R&D obligations, 1997 (millions)	$3,920	$68,424	4	government	12%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

	Performer							
Agency	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	3,919,868	225,150	0	3,444,087	240,003	7,021	3,607	4
Department of Agriculture	47,635	33,644	0	0	13,478	445	68	6
Department of Commerce	1,667	379	0	52	684	552	0	32
Department of Defense	3,472,381	14,812	0	3,420,831	33,847	2,891	0	3
Department of Energy	10,494	0	0	233	9,866	395	0	30
Department of Health & Human Services	294,638	154,211	0	3,333	135,797	1,295	2	11
Department of Interior	11,590	11,094	0	53	433	0	0	13
Department of Transportation	11,771	40	0	9,630	635	187	1,279	10
Environmental Protection Agency	14,031	10,294	0	126	3,241	370	0	10
National Aeronautics & Space Admin	22,093	676	0	8,922	11,729	766	0	21
National Science Foundation	33,568	0	0	897	30,293	120	2,258	22
State rank, total	4	13	na	2	17	30	19	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles"

Hawaii

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	2,585	483,162	38	Total R&D performance, 1997 (millions)	$275	$199,110	43
Doctoral engineers, 1997[1]	224	97,075	45	Industry R&D, 1997 (millions)	$87	$150,329	44
S&E doctorates awarded, 1998[1]	130	27,272	38	Academic R&D, 1997 (millions)	$120	$23,740	37
of which, in social sciences	31%	15%		of which, in life sciences	41%	56%	
in life sciences	29%	25%		in environmental sciences	32%	6%	
in physical sciences	15%	14%		in physical sciences	17%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	122	37,928	36	expenditures, 1996 (millions)	$751	$189,626	42
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	128	35,413	29
in doctorate-granting institutions	1,916	424,650	39	Patents issued to State residents, 1998	84	80,287	46
Population, 1998 (000s)	1,193	274,153	42	Gross State product, 1997 (billions)	$38	$8,152	42
Civilian labor force, 1998 (000s)	597	139,125	43	of which, agriculture	1%	2%	
				manufacturing, mining, construction	8%	23%	
Personal income per capita, 1998	$26,137	$26,412	18	transportation, communication, utilities	10%	8%	
				wholesale and retail trade	15%	16%	
Federal spending				finance, insurance, real estate	22%	19%	
Total expenditures, 1998 (millions)	$8,442	$1,453,884	39	services	22%	20%	
R&D obligations, 1997 (millions)	$151	$68,424	40	government	21%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	150,722	54,318	0	25,893	56,337	13,207	967	40
Department of Agriculture	21,250	10,015	0	0	5,871	5,364	0	25
Department of Commerce	12,839	8,760	0	777	3,172	0	130	19
Department of Defense	60,710	29,582	0	23,066	8,062	0	0	31
Department of Energy	3,005	0	0	0	2,814	191	0	40
Department of Health & Human Services	20,938	0	0	683	15,882	3,823	550	44
Department of Interior	5,988	5,811	0	18	159	0	0	29
Department of Transportation	383	0	0	0	96	0	287	48
Environmental Protection Agency	140	0	0	0	140	0	0	47
National Aeronautics & Space Admin.	6,932	150	0	955	3,336	2,491	0	33
National Science Foundation	18,537	0	0	394	16,805	1,338	0	28
State rank, total	40	28	na	39	36	24	38	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles"

Idaho

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	1,992	483,162	43	Total R&D performance, 1997 (millions)	$1,270	$199,110	30
Doctoral engineers, 1997[1]	411	97,075	38	Industry R&D, 1997 (millions)	$1,181	$150,329	24
S&E doctorates awarded, 1998[1]	51	27,272	48	Academic R&D, 1997 (millions)	$64	$23,740	46
of which, in life sciences	47%	25%		of which, in life sciences	71%	56%	
in physical sciences	20%	14%		in engineering	15%	16%	
in engineering	18%	22%		in environmental sciences	6%	6%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	37	37,928	47	expenditures, 1996 (millions)	$607	$189,626	45
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-1998	44	35,413	43
in doctorate-granting institutions	1,618	424,650	42	Patents issued to state residents, 1998	855	80,287	24
Population, 1998 (000s)	1,229	274,153	41	Gross state product, 1997 (billions)	$29	$8,152	45
Civilian labor force, 1998 (000s)	653	139,125	40	of which, agriculture	6%	2%	
				manufacturing, mining, construction	27%	23%	
Personal income per capita, 1998	$21,081	$26,412	44	transportation, communication, utilities	9%	8%	
				wholesale and retail trade	16%	16%	
Federal spending				finance, insurance, real estate	13%	19%	
Total expenditures, 1998 (millions)	$5,961	$1,453,884	44	services	17%	20%	
R&D obligations, 1997 (millions)	$206	$68,424	36	government	13%	12%	

NOTE: Rankings and totals are based on data for the 50 states, D.C., and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by state, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	(In thousands of dollars)							
Total, all agencies	205,660	24,092	56,664	110,729	13,609	315	251	36
Department of Agriculture	17,166	12,982	0	0	3,981	181	22	30
Department of Commerce	1,538	1,411	0	52	75	0	0	34
Department of Defense	10,978	1,230	4,801	3,369	1,578	0	0	44
Department of Energy	159,735	900	50,693	105,613	2,529	0	0	11
Dept. of Health & Human Services	1,538	0	0	232	1,172	134	0	51
Department of Interior	8,934	7,479	0	13	1,442	0	0	17
Department of Transportation	2,416	0	1,080	1,107	0	0	229	29
Environmental Protection Agency	288	0	0	0	288	0	0	45
Nat'l Aeronautics & Space Admin.	570	90	90	262	128	0	0	51
National Science Foundation	2,497	0	0	81	2,416	0	0	51
State rank, total	36	43	11	29	52	51	51	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 states, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCE: Prepared by the National Science Foundation/ Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles"

Illinois

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	19,887	483,162	7	Total R&D performance, 1997 (millions)	$8,034	$199,110	8
Doctoral engineers, 1997[1]	3,742	97,075	9	Industry R&D, 1997 (millions)	$6,248	$150,329	9
S&E doctorates awarded, 1998[1]	1,467	27,272	5	Academic R&D, 1997 (millions)	$930	$23,740	7
of which, in engineering	24%	22%		of which, in life sciences	53%	56%	
in life sciences	20%	25%		in engineering	13%	16%	
in social sciences	18%	15%		in physical sciences	11%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	1,030	37,928	10	expenditures, 1996 (millions)	$9,457	$189,626	5
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	525	35,413	19
in doctorate-granting institutions	21,126	424,650	5	Patents issued to State residents, 1998	3,727	80,287	5
Population, 1998 (000s)	12,045	274,153	5	Gross State product, 1997 (billions)	$394	$8,152	4
Civilian labor force, 1998 (000s)	6,223	139,125	5	of which, agriculture	1%	2%	
				manufacturing, mining, construction	23%	23%	
Personal income per capita, 1998	$28,873	$26,412	9	transportation, communication, utilities	9%	8%	
				wholesale and retail trade	16%	16%	
Federal spending				finance, insurance, real estate	20%	19%	
Total expenditures, 1998 (millions)	$55,467	$1,453,884	7	services	21%	20%	
R&D obligations, 1997 (millions)	$1,140	$68,424	17	government	10%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	1,140,163	77,224	422,522	114,294	465,934	54,309	5,880	17
Department of Agriculture	41,089	29,030	0	0	11,625	434	0	7
Department of Commerce	14,973	65	3	12,239	1,391	650	625	16
Department of Defense	145,256	40,614	3,346	57,223	43,089	984	0	28
Department of Energy	474,034	2,148	418,909	22,160	30,518	299	0	4
Department of Health & Human Services	314,840	814	0	9,137	256,683	44,420	3,786	10
Department of Interior	3,735	3,462	0	0	253	20	0	40
Department of Transportation	11,128	260	0	8,076	443	1,075	1,274	11
Environmental Protection Agency	2,409	0	0	179	2,230	0	0	23
National Aeronautics & Space Admin	17,938	831	264	4,016	11,856	776	195	24
National Science Foundation	114,761	0	0	1,264	107,846	5,651	0	4
State rank, total	17	26	3	27	8	12	10	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles"

Indiana

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	7,155	483,162	23	Total R&D performance, 1997 (millions)	$3,149	$199,110	18
Doctoral engineers, 1997[1]	1,166	97,075	25	Industry R&D, 1997 (millions)	$2,677	$150,329	15
S&E doctorates awarded, 1998[1]	689	27,272	11	Academic R&D, 1997 (millions)	$400	$23,740	19
of which, in engineering	25%	22%		of which, in life sciences	49%	56%	
in life sciences	23%	25%		in engineering	19%	16%	
in physical sciences	18%	14%		in physical sciences	15%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	699	37,928	16	expenditures, 1996 (millions)	$3,930	$189,626	16
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	168	35,413	27
in doctorate-granting institutions	9,269	424,650	13	Patents issued to State residents, 1998	1,372	80,287	19
Population, 1998 (000s)	5,899	274,153	14	Gross State product, 1997 (billions)	$162	$8,152	15
Civilian labor force, 1998 (000s)	3,088	139,125	14	of which, agriculture	2%	2%	
				manufacturing, mining, construction	36%	23%	
Personal income per capita, 1998	$24,219	$26,412	30	transportation, communication, utilities	8%	8%	
				wholesale and retail trade	15%	16%	
Federal spending				finance, insurance, real estate	13%	19%	
Total expenditures, 1998 (millions)	$26,098	$1,453,884	18	services	16%	20%	
R&D obligations, 1997 (millions)	$411	$68,424	25	government	10%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	410,646	68,272	0	138,563	197,947	3,588	2,276	25
Department of Agriculture	16,956	4,685	0	82	12,182	7	0	31
Department of Commerce	869	18	0	323	528	0	0	39
Department of Defense	201,363	57,938	0	126,729	13,939	2,757	0	24
Department of Energy	28,212	0	0	1,938	26,274	0	0	23
Department of Health & Human Services	100,809	166	0	4,514	94,824	104	1,201	25
Department of Interior	5,041	4,894	0	25	122	0	0	33
Department of Transportation	1,075	0	0	0	0	0	1,075	36
Environmental Protection Agency	1,942	0	0	117	1,153	672	0	29
National Aeronautics & Space Admin	7,872	571	0	4,360	2,897	44	0	32
National Science Foundation	46,507	0	0	475	46,028	4	0	17
State rank, total	25	27	na	25	21	37	30	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

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Iowa

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	4,181	483,162	32	Total R&D performance, 1997 (millions)	$980	$199,110	34
Doctoral engineers, 1997[1]	537	97,075	35	Industry R&D, 1997 (millions)	$578	$150,329	35
S&E doctorates awarded, 1998[1]	423	27,272	23	Academic R&D, 1997 (millions)	$342	$23,740	24
of which, in life sciences	27%	25%		of which, in life sciences	62%	56%	
in engineering	25%	22%		in engineering	18%	16%	
in physical sciences	17%	14%		in physical sciences	8%	10%	
S&E postdoctorates, 1997[1]							
in doctorate-granting institutions	501	37,928	23	Higher education current-fund expenditures, 1996 (millions)	$2,890	$189,626	22
S&E graduate students, 1997[1]							
in doctorate-granting institutions	5,130	424,650	27	Number of SBIR awards, 1990-98	51	35,413	42
Population, 1998 (000s)	2,862	274,153	31	Patents issued to State residents, 1998	644	80,287	27
Civilian labor force, 1998 (000s)	1,570	139,125	30	Gross State product, 1997 (billions)	$81	$8,152	29
				of which, agriculture	7%	2%	
Personal income per capita, 1998	$23,925	$26,412	33	manufacturing, mining, construction	29%	23%	
				transportation, communication, utilities	8%	8%	
Federal spending				wholesale and retail trade	15%	16%	
Total expenditures, 1998 (millions)	$14,535	$1,453,884	32	finance, insurance, real estate	15%	19%	
R&D obligations, 1997 (millions)	$228	$68,424	34	services	15%	20%	
				government	11%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	228,180	29,043	20,450	33,365	139,714	3,252	2,356	34
Department of Agriculture	41,080	25,748	0	0	15,332	0	0	8
Department of Commerce	1,225	0	0	190	1,035	0	0	37
Department of Defense	37,325	326	1,563	30,583	4,853	0	0	34
Department of Energy	25,510	0	18,887	1,001	3,922	1,700	0	24
Department of Health & Human Services	92,903	9	0	747	90,301	1,552	294	26
Department of Interior	3,076	2,960	0	0	116	0	0	44
Department of Transportation	4,925	0	0	0	2,863	0	2,062	20
Environmental Protection Agency	2,162	0	0	70	2,092	0	0	27
National Aeronautics & Space Admin	6,717	0	0	755	5,962	0	0	34
National Science Foundation	13,257	0	0	19	13,238	0	0	33
State rank, total	34	41	15	35	27	39	28	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

Kansas

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	3,801	483,162	34	Total R&D performance, 1997 (millions)	$1,351	$199,110	29
Doctoral engineers, 1997[1]	543	97,075	34	Industry R&D, 1997 (millions)	$1,136	$150,329	25
S&E doctorates awarded, 1998[1]	287	27,272	28	Academic R&D, 1997 (millions)	$198	$23,740	32
of which, in life sciences	30%	25%		of which, in life sciences	57%	56%	
in engineering	17%	22%		in engineering	16%	16%	
in psychology	17%	13%		in physical sciences	10%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	262	37,928		expenditures, 1996 (millions)	$1,726	$189,626	32
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	73	35,413	37
in doctorate-granting institutions	6,367	424,650	23	Patents issued to State residents, 1998	349	80,287	34
Population, 1998 (000s)	2,629	274,153	33	Gross State product, 1997 (billions)	$72	$8,152	31
Civilian labor force, 1998 (000s)	1,411	139,125	31	of which, agriculture	4%	2%	
				manufacturing, mining, construction	23%	23%	
Personal income per capita, 1998	$24,981	$26,412	25	transportation, communication, utilities	11%	8%	
				wholesale and retail trade	18%	16%	
Federal spending				finance, insurance, real estate	13%	19%	
Total expenditures, 1998 (millions)	$13,426	$1,453,884	33	services	17%	20%	
R&D obligations, 1997 (millions)	$255	$68,424	33	government	14%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	255,490	15,622	0	171,241	63,749	1,328	3,550	33
Department of Agriculture	13,078	6,529	0	0	6,549	0	0	35
Department of Commerce	564	102	0	0	0	462	0	41
Department of Defense	173,818	3,322	0	168,130	2,363	3	0	26
Department of Energy	4,401	0	0	233	4,168	0	0	36
Department of Health & Human Services	37,570	803	0	1,814	31,164	707	3,082	36
Department of Interior	4,961	4,866	0	14	81	0	0	34
Department of Transportation	542	0	0	0	74	0	468	45
Environmental Protection Agency	2,849	0	0	85	2,608	156	0	22
National Aeronautics & Space Admin	3,774	0	0	942	2,832	0	0	38
National Science Foundation	13,933	0	0	23	13,910	0	0	32
State rank, total	33	46	na	22	35	47	22	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

Kentucky

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	4,228	483,162	30	Total R&D performance, 1997 (millions)	$526	$199,110	38
Doctoral engineers, 1997[1]	308	97,075	44	Industry R&D, 1997 (millions)	$359	$150,329	38
S&E doctorates awarded, 1998[1]	202	27,272	33	Academic R&D, 1997 (millions)	$158	$23,740	35
of which, in life sciences	40%	25%		of which, in life sciences	75%	56%	
in psychology	14%	13%		in engineering	15%	16%	
in engineering	14%	22%		in physical sciences	4%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	206	37,928	31	expenditures, 1996 (millions)	$2,146	$189,626	29
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	61	35,413	40
in doctorate-granting institutions	3,417	424,650	33	Patents issued to State residents, 1998	349	80,287	34
Population, 1998 (000s)	3,936	274,153	25	Gross State product, 1997 (billions)	$100	$8,152	26
Civilian labor force, 1998 (000s)	1,924	139,125	26	of which, agriculture	3%	2%	
				manufacturing, mining, construction	34%	23%	
Personal income per capita, 1998	$21,506	$26,412	40	transportation, communication, utilities	8%	8%	
				wholesale and retail trade	15%	16%	
Federal spending				finance, insurance, real estate	12%	19%	
Total expenditures, 1998 (millions)	$23,161	$1,453,884	22	services	15%	20%	
R&D obligations, 1997 (millions)	$91	$68,424	43	government	13%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	91,291	7,289	0	7,436	71,617	1,086	3,863	43
Department of Agriculture	8,474	1	0	0	8,473	0	0	39
Department of Commerce	184	54	0	0	0	130	0	50
Department of Defense	9,530	4,495	0	2,469	2,566	0	0	46
Department of Energy	5,698	0	0	1,434	4,264	0	0	34
Department of Health & Human Services	51,828	0	0	3,093	44,687	896	3,152	31
Department of Interior	2,895	2,739	0	10	146	0	0	45
Department of Transportation	866	0	0	155	0	0	711	39
Environmental Protection Agency	974	0	0	143	771	60	0	35
National Aeronautics & Space Admin.	1,552	0	0	45	1,507	0	0	45
National Science Foundation	9,290	0	0	87	9,203	0	0	43
State rank, total	43	51	na	46	32	48	16	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles"

Louisiana

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	5,293	483,162	28	Total R&D performance, 1997 (millions)	$554	$199,110	37
Doctoral engineers, 1997[1]	818	97,075	30	Industry R&D, 1997 (millions)	$172	$150,329	41
S&E doctorates awarded, 1998[1]	321	27,272	26	Academic R&D, 1997 (millions)	$330	$23,740	25
of which, in life sciences	35%	25%		of which, in life sciences	63%	56%	
in engineering	15%	22%		in engineering	15%	16%	
in social sciences	13%	15%		in environmental sciences	7%	6%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	264	37,928	28	expenditures, 1996 (millions)	$2,561	$189,626	25
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	94	35,413	33
in doctorate-granting institutions	5,834	424,650	25	Patents issued to State residents, 1998	485	80,287	31
Population, 1998 (000s)	4,369	274,153	22	Gross State product, 1997 (billions)	$124	$8,152	23
Civilian labor force, 1998 (000s)	2,063	139,125	24	of which, agriculture	1%	2%	
				manufacturing, mining, construction	36%	23%	
Personal income per capita, 1998	$21,346	$26,412	42	transportation, communication, utilities	9%	8%	
				wholesale and retail trade	14%	16%	
Federal spending				finance, insurance, real estate	13%	19%	
Total expenditures, 1998 (millions)	$22,900	$1,453,884	23	services	16%	20%	
R&D obligations, 1997 (millions)	$211	$68,424	35	government	11%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

	Performer							
Agency	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	211,036	47,910	0	31,766	123,586	4,214	3,560	35
Department of Agriculture	32,823	24,723	0	0	8,042	58	0	14
Department of Commerce	8,011	5,836	0	625	1,035	515	0	25
Department of Defense	30,768	957	0	7,305	22,434	72	0	36
Department of Energy	9,989	0	0	85	9,904	0	0	31
Department of Health & Human Services	64,520	3,916	0	166	57,017	3,420	1	29
Department of Interior	15,148	12,478	0	684	1,986	0	0	8
Department of Transportation	803	0	0	131	0	0	672	40
Environmental Protection Agency	6,651	0	0	0	6,502	149	0	18
National Aeronautics & Space Admin	27,174	0	0	22,645	4,529	0	0	20
National Science Foundation	15,149	0	0	125	12,137	0	2,887	30
State rank, total	35	31	na	36	29	35	21	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

Maine

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	2,341	483,162	39	Total R&D performance, 1997 (millions)	$149	$199,110	47
Doctoral engineers, 1997[1]	400	97,075	39	Industry R&D, 1997 (millions)	$83	$150,329	45
S&E doctorates awarded, 1998[1]	34	27,272	50	Academic R&D, 1997 (millions)	$33	$23,740	51
of which, in life sciences	47%	25%		of which, in life sciences	50%	56%	
in psychology	21%	13%		in environmental sciences	26%	6%	
in engineering	15%	22%		in engineering	14%	16%	
S&E postdoctorates, 1997[1]				Higher education current fund			
in doctorate-granting institutions	25	37,928	48	expenditures, 1996 (millions)	$673	$189,626	43
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	83	35,413	36
in doctorate-granting institutions	765	424,650	50	Patents issued to State residents, 1998	123	80,287	45
Population, 1998 (000s)	1,244	274,153	40	Gross State product, 1997 (billions)	$30	$8,152	44
Civilian labor force, 1998 (000s)	651	139,125	42	of which, agriculture	2%	2%	
				manufacturing, mining, construction	22%	23%	
Personal income per capita, 1998	$22,952	$26,412	37	transportation, communication, utilities	7%	8%	
				wholesale and retail trade	18%	16%	
Federal spending				finance, insurance, real estate	19%	19%	
Total expenditures, 1998 (millions)	$7,463	$1,453,884	42	services	19%	20%	
R&D obligations, 1997 (millions)	$69	$68,424	46	government	13%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	68,683	5,685	0	19,962	13,866	26,791	2,379	46
Department of Agriculture	4,529	381	0	0	4,104	1	43	48
Department of Commerce	5,335	3,585	0	0	1,417	333	0	26
Department of Defense	19,539	371	0	17,902	1,232	34	0	40
Department of Energy	2,035	0	0	60	796	579	600	42
Department of Health & Human Services	26,601	0	0	1,797	1,165	22,222	1,417	40
Department of Interior	1,806	1,348	0	16	442	0	0	49
Department of Transportation	151	0	0	37	0	0	114	52
Environmental Protection Agency	683	0	0	0	683	0	0	39
National Aeronautics & Space Admin	1,091	0	0	56	430	400	205	47
National Science Foundation	6,913	0	0	94	3,597	3,222	0	47
State rank, total	46	52	na	40	51	17	27	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

Maryland

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	20,542	483,162	6	Total R&D performance, 1997 (millions)	$7,395	$199,110	10
Doctoral engineers, 1997[1]	3,203	97,075	10	Industry R&D, 1997 (millions)	$1,425	$150,329	20
S&E doctorates awarded, 1998[1]	657	27,272	12	Academic R&D, 1997 (millions)	$1,242	$23,740	5
of which, in life sciences	26%	25%		of which, in life sciences	41%	56%	
in engineering	22%	22%		in engineering	22%	16%	
in social sciences	16%	15%		in physical sciences	15%	10%	
S&E postdoctorates, 1997[1]				Higher education current fund			
in doctorate-granting institutions	1,372	37,928	6	expenditures, 1996 (millions)	$4,009	$189,626	14
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	1,759	35,413	4
in doctorate-granting institutions	8,834	424,650	16	Patents issued to State residents, 1998	1,442	80,287	18
Population, 1998 (000s)	5,135	274,153	19	Gross State product, 1997 (billions)	$154	$8,152	16
Civilian labor force, 1998 (000s)	2,756	139,125	19	of which, agriculture	1%	2%	
				manufacturing, mining, construction	14%	23%	
Personal income per capita, 1998	$29,943	$26,412	6	transportation, communication, utilities	7%	8%	
				wholesale and retail trade	15%	16%	
Federal spending				finance, insurance, real estate	22%	19%	
Total expenditures, 1998 (millions)	$41,565	$1,453,884	10	services	24%	20%	
R&D obligations, 1997 (millions)	$7,329	$68,424	2	government	17%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

	Performer							
Agency	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	7,328,937	4,569,181	161,028	1,740,648	700,293	154,995	2,792	2
Department of Agriculture	124,859	117,658	0	90	6,863	115	133	2
Department of Commerce	337,400	320,265	0	10,014	6,847	274	0	1
Department of Defense	2,633,709	1,515,748	808	928,585	182,524	5,684	360	4
Department of Energy	50,605	22,837	0	10,475	11,676	5,617	0	18
Department of Health & Human Services	3,004,910	2,226,541	156,946	214,216	356,566	49,711	930	1
Department of Interior	17,555	16,815	0	407	328	5	0	6
Department of Transportation	33,540	5,578	0	24,923	2,296	0	743	5
Environmental Protection Agency	11,600	0	0	3,499	7,624	77	400	12
National Aeronautics & Space Admin	1,057,414	340,792	3,274	541,642	81,768	89,712	226	3
National Science Foundation	57,345	2,947	0	6,797	43,801	3,800	0	13
State rank, total	2	1	9	6	5	6	24	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center. SBIR = small business innovation research. na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles."

Massachusetts

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	21,364	483,162	5	Total R&D performance, 1997 (millions)	$11,097	$199,110	5
Doctoral engineers, 1997[1]	3,945	97,075	7	Industry R&D, 1997 (millions)	$8,300	$150,329	5
S&E doctorates awarded, 1998[1]	1,533	27,272	4	Academic R&D, 1997 (millions)	$1,268	$23,740	4
of which, in engineering	25%	22%		of which, in life sciences	39%	56%	
in life sciences	24%	25%		in engineering	19%	16%	
in social sciences	20%	15%		in physical sciences	15%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	3,920	37,928	2	expenditures, 1996 (millions)	$8,427	$189,626	6
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	5,514	35,413	2
in doctorate-granting institutions	22,316	424,650	4	Patents issued to State residents, 1998	3,413	80,287	7
Population, 1998 (000s)	6,147	274,153	13	Gross State product, 1997 (billions)	$221	$8,152	11
Civilian labor force, 1998 (000s)	3,273	139,125	13	of which, agriculture	1%	2%	
				manufacturing, mining, construction	18%	23%	
Personal income per capita, 1998	$32,797	$26,412	4	transportation, communication, utilities	6%	8%	
				wholesale and retail trade	15%	16%	
Federal spending				finance, insurance, real estate	24%	19%	
Total expenditures, 1998 (millions)	$37,173	$1,453,884	12	services	26%	20%	
R&D obligations, 1997 (millions)	$3,438	$68,424	6	government	9%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

	Performer							
Agency	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	3,437,962	361,118	319,153	1,308,755	792,569	652,158	4,209	6
Department of Agriculture	21,406	15,372	0	63	5,713	249	9	23
Department of Commerce	51,887	38,181	0	7,765	4,147	1,794	0	5
Department of Defense	1,819,317	239,442	319,003	1,128,158	98,737	33,977	0	6
Department of Energy	109,045	18	0	30,105	74,435	4,487	0	12
Department of Health & Human Services	1,048,408	1,659	0	90,034	411,247	542,872	2,596	3
Department of Interior	6,434	5,903	0	9	522	0	0	27
Department of Transportation	43,819	27,630	0	12,693	1,892	0	1,604	3
Environmental Protection Agency	14,755	0	0	2,003	7,576	5,176	0	9
National Aeronautics & Space Admin.	153,619	30,832	150	25,944	49,356	47,337	0	9
National Science Foundation	169,272	2,081	0	11,981	138,944	16,266	0	3
State rank, total	6	11	4	8	3	1	13	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center, SBIR = small business innovation research, na = not applicable

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles"

Michigan

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	12,939	483,162	13	Total R&D performance, 1997 (millions)	$13,991	$199,110	2
Doctoral engineers, 1997[1]	3,813	97,075	8	Industry R&D, 1997 (millions)	$13,009	$150,329	2
S&E doctorates awarded, 1998[1]	1,027	27,272	8	Academic R&D, 1997 (millions)	$842	$23,740	8
of which, in engineering	27%	22%		of which, in life sciences	55%	56%	
in life sciences	21%	25%		in engineering	19%	16%	
in social sciences	16%	15%		in social sciences	10%	4%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	1,119	37,928	8	expenditures, 1996 (millions)	$6,562	$189,626	8
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	690	35,413	14
in doctorate-granting institutions	16,296	424,650	9	Patents issued to State residents, 1998	3,511	80,287	6
Population, 1998 (000s)	9,817	274,153	8	Gross State product, 1997 (billions)	$273	$8,152	9
Civilian labor force, 1998 (000s)	5,029	139,125	8	of which, agriculture	1%	2%	
				manufacturing, mining, construction	30%	23%	
Personal income per capita, 1998	$25,857	$26,412	19	transportation, communication, utilities	7%	8%	
				wholesale and retail trade	17%	16%	
Federal spending				finance, insurance, real estate	15%	19%	
Total expenditures, 1998 (millions)	$41,917	$1,453,884	9	services	19%	20%	
R&D obligations, 1997 (millions)	$735	$68,424	21	government	11%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[in thousands of dollars]							
Total, all agencies	735,221	107,749	0	166,289	425,543	31,743	3,897	21
Department of Agriculture	20,749	6,435	0	82	14,232	0	0	26
Department of Commerce	29,343	6,073	0	20,621	1,595	1,054	0	8
Department of Defense	251,334	87,035	0	117,974	30,221	16,089	15	22
Department of Energy	12,570	0	0	0	12,570	0	0	29
Department of Health & Human Services	291,306	836	0	13,288	268,066	6,362	2,754	12
Department of Interior	7,519	7,370	0	7	104	0	38	19
Department of Transportation	4,657	0	0	1,190	2,478	0	989	21
Environmental Protection Agency	15,754	0	0	7,854	5,879	1,920	101	6
National Aeronautics & Space Admin.	19,031	0	0	3,657	10,827	4,547	0	23
National Science Foundation	82,958	0	0	1,616	79,571	1,771	0	7
State rank, total	21	22	na	24	9	16	15	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

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Minnesota

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	9,528	483,162	18	Total R&D performance, 1997 (millions)	$3,605	$199,110	15
Doctoral engineers, 1997[1]	1,453	97,075	19	Industry R&D, 1997 (millions)	$3,116	$150,329	13
S&E doctorates awarded, 1998[1]	481	27,272	19	Academic R&D, 1997 (millions)	$363	$23,740	23
of which, in life sciences	31%	25%		of which, in life sciences	73%	56%	
in engineering	21%	22%		in engineering	11%	16%	
in social sciences	15%	15%		in physical sciences	5%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	791	37,928	14	expenditures, 1996 (millions)	$3,597	$189,626	18
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	554	35,413	18
in doctorate-granting institutions	5,892	424,650	24	Patents issued to State residents, 1998	2,472	80,287	11
Population, 1998 (000s)	4,725	274,153	20	Gross State product, 1997 (billions)	$149	$8,152	18
Civilian labor force, 1998 (000s)	2,682	139,125	20	of which, agriculture	2%	2%	
				manufacturing, mining, construction	24%	23%	
Personal income per capita, 1998	$27,510	$26,412	12	transportation, communication, utilities	8%	8%	
				wholesale and retail trade	17%	16%	
Federal spending				finance, insurance, real estate	18%	19%	
Total expenditures, 1998 (millions)	$20,399	$1,453,884	26	services	20%	20%	
R&D obligations, 1997 (millions)	$609	$68,424	23	government	11%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	609,395	34,573	0	286,173	193,278	91,783	3,588	23
Department of Agriculture	21,735	13,170	0	0	8,274	224	67	22
Department of Commerce	10,470	185	0	8,244	768	650	623	21
Department of Defense	302,187	1,263	0	265,475	8,605	26,844	0	21
Department of Energy	6,334	0	0	70	6,264	0	0	32
Department of Health & Human Services	203,687	800	0	8,009	129,466	63,062	2,350	15
Department of Interior	6,443	6,288	0	8	147	0	0	26
Department of Transportation	1,197	0	0	552	97	0	548	34
Environmental Protection Agency	15,386	12,867	0	0	1,918	601	0	7
National Aeronautics & Space Admin	6,441	0	0	2,946	3,093	402	0	36
National Science Foundation	35,515	0	0	869	34,646	0	0	20
State rank, total	23	37	na	18	22	8	20	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

Mississippi

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	2,725	483,162	37	Total R&D performance, 1997 (millions)	$370	$199,110	41
Doctoral engineers, 1997[1]	578	97,075	33	Industry R&D, 1997 (millions)	$73	$150,329	46
S&E doctorates awarded, 1998[1]	159	27,272	37	Academic R&D, 1997 (millions)	$125	$23,740	36
of which, in life sciences	31%	25%		of which, in life sciences	59%	56%	
in psychology	18%	13%		in engineering	18%	16%	
in physical sciences	17%	14%		in physical sciences	10%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	79	37,928	40	expenditures, 1996 (millions)	$1,568	$189,626	34
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	34	35,413	45
in doctorate-granting institutions	3,098	424,650	35	Patents issued to State residents, 1998	173	80,287	42
Population, 1998 (000s)	2,752	274,153	32	Gross State product, 1997 (billions)	$58	$8,152	33
Civilian labor force, 1998 (000s)	1,269	139,125	33	of which, agriculture	3%	2%	-
				manufacturing, mining, construction	28%	23%	
Personal income per capita, 1998	$18,958	$26,412	51	transportation, communication, utilities	10%	8%	
				wholesale and retail trade	16%	16%	
Federal spending				finance, insurance, real estate	12%	19%	
Total expenditures, 1998 (millions)	$15,314	$1,453,884	30	services	17%	20%	
R&D obligations, 1997 (millions)	$290	$68,424	31	government	15%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

	Performer							
Agency	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	269,791	165,297	0	72,030	44,569	6,659	1,236	31
Department of Agriculture	54,282	37,831	0	0	15,516	935	0	5
Department of Commerce	9,415	7,815	0	617	358	0	625	23
Department of Defense	113,384	70,985	0	34,649	6,506	1,244	0	29
Department of Energy	1,060	0	0	40	1,020	0	0	45
Department of Health & Human Services	14,330	0	0	370	12,748	1,211	1	45
Department of Interior	3,384	3,288	0	11	85	0	0	43
Department of Transportation	3,118	2,063	0	132	313	0	610	27
Environmental Protection Agency	893	0	0	0	743	150	0	36
National Aeronautics & Space Admin	84,164	43,315	0	36,209	1,521	3,119	0	13
National Science Foundation	5,761	0	0	2	5,759	0	0	48
State rank, total	31	17	na	30	39	31	35	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

Missouri

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	8,988	483,162	19	Total R&D performance, 1997 (millions)	$1,826	$199,110	24
Doctoral engineers, 1997[1]	1,322	97,075	24	Industry R&D, 1997 (millions)	$1,290	$150,329	22
S&E doctorates awarded, 1998[1]	476	27,272	20	Academic R&D, 1997 (millions)	$465	$23,740	15
of which, in life sciences	29%	25%		of which, in life sciences	79%	56%	
in engineering	23%	22%		in engineering	8%	16%	
in psychology	15%	13%		in physical sciences	4%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	904	37,928	12	expenditures, 1996 (millions)	$3,986	$189,626	15
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	150	35,413	28
in doctorate-granting institutions	6,725	424,650	21	Patents issued to State residents, 1998	900	80,287	23
Population, 1998 (000s)	5,439	274,153	16	Gross State product, 1997 (billions)	$152	$8,152	17
Civilian labor force, 1998 (000s)	2,857	139,125	17	of which, agriculture	2%	2%	
				manufacturing, mining, construction	26%	23%	
Personal income per capita, 1998	$24,427	$26,412	29	transportation, communication, utilities	10%	8%	
				wholesale and retail trade	17%	16%	
Federal spending				finance, insurance, real estate	15%	19%	
Total expenditures, 1998 (millions)	$32,682	$1,453,884	15	services	20%	20%	
R&D obligations, 1997 (millions)	$1,130	$68,424	18	government	11%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

	Performer							
Agency	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	1,130,148	50,526	0	786,905	267,999	21,003	3,715	18
Department of Agriculture	22,686	9,332	0	90	13,264	0	0	21
Department of Commerce	282	83	0	0	15	184	0	48
Department of Defense	812,953	29,673	0	775,273	8,007	0	0	12
Department of Energy	3,165	0	0	0	3,149	16	0	39
Department of Health & Human Services	236,635	20	0	847	215,668	17,905	2,195	13
Department of Interior	11,765	11,108	0	19	583	0	55	12
Department of Transportation	3,258	235	0	0	42	1,516	1,465	26
Environmental Protection Agency	283	0	0	0	283	0	0	46
National Aeronautics & Space Admin	16,009	75	0	10,548	5,386	0	0	25
National Science Foundation	23,112	0	0	128	21,602	1,382	0	24
State rank, total	18	29	na	9	14	20	17	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles"

Montana

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	1,978	483,162	44	Total R&D performance, 1997 (millions)	$199	$199,110	46
Doctoral engineers, 1997[1]	138	97,075	50	Industry R&D, 1997 (millions)	$92	$150,329	43
S&E doctorates awarded, 1998[1]	68	27,272	43	Academic R&D, 1997 (millions)	$71	$23,740	44
of which, in life sciences	53%	25%		of which, in life sciences	66%	56%	
in physical sciences	18%	14%		in engineering	10%	16%	
in psychology	15%	13%		in physical sciences	8%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	67	37,928	42	expenditures, 1996 (millions)	$459	$189,626	49
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	64	35,413	39
in doctorate-granting institutions	1,150	424,650	47	Patents issued to State residents, 1998	130	80,287	44
Population, 1998 (000s)	880	274,153	45	Gross State product, 1997 (billions)	$19	$8,152	49
Civilian labor force, 1998 (000s)	468	139,125	45	of which, agriculture	5%	2%	
				manufacturing, mining, construction	17%	23%	
Personal income per capita, 1998	$20,172	$26,412	48	transportation, communication, utilities	12%	8%	
				wholesale and retail trade	17%	16%	
Federal spending				finance, insurance, real estate	14%	19%	
Total expenditures, 1998 (millions)	$5,465	$1,453,884	45	services	20%	20%	
R&D obligations, 1997 (millions)	$79	$68,424	45	government	16%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	79,347	33,199	0	10,103	32,117	3,561	367	45
Department of Agriculture	18,832	11,184	0	20	6,240	1,388	0	28
Department of Commerce	1,664	0	0	0	1,200	464	0	33
Department of Defense	13,485	794	0	8,783	3,908	0	0	43
Department of Energy	1,565	0	0	131	935	499	0	44
Department of Health & Human Services	22,555	15,175	0	690	5,548	1,141	1	43
Department of Interior	6,707	6,046	0	22	639	0	0	23
Department of Transportation	503	0	0	0	137	0	366	47
Environmental Protection Agency	330	0	0	0	330	0	0	44
National Aeronautics & Space Admin	4,249	0	0	255	3,925	69	0	37
National Science Foundation	9,457	0	0	202	9,255	0	0	41
State rank, total	45	39	na	43	43	38	48	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center. SBIR = small business innovation research. na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles."

Nebraska

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	2,871	483,162	36	Total R&D performance, 1997 (millions)	$275	$199,110	43
Doctoral engineers, 1997[1]	343	97,075	42	Industry R&D, 1997 (millions)	$71	$150,329	47
S&E doctorates awarded, 1998[1]	189	27,272	35	Academic R&D, 1997 (millions)	$176	$23,740	33
of which, in life sciences	45%	25%		of which, in life sciences	75%	56%	
in social sciences	15%	15%		in engineering	11%	16%	
in psychology	13%	13%		in environmental sciences	7%	6%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	135	37,928	35	expenditures, 1996 (millions)	$1,481	$189,626	35
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	55	35,413	41
in doctorate-granting institutions	2,780	424,650	36	Patents issued to State residents, 1998	204	80,287	40
Population, 1998 (000s)	1,663	274,153	39	Gross State product, 1997 (billions)	$49	$8,152	37
Civilian labor force, 1998 (000s)	916	139,125	37	of which, agriculture	7%	2%	
				manufacturing, mining, construction	18%	23%	
Personal income per capita, 1998	$24,754	$26,412	28	transportation, communication, utilities	11%	8%	
				wholesale and retail trade	16%	16%	
Federal spending				finance, insurance, real estate	15%	19%	
Total expenditures, 1998 (millions)	$8,253	$1,453,884	40	services	18%	20%	
R&D obligations, 1997 (millions)	$83	$68,424	44	government	14%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	82,981	23,741	0	5,761	47,959	5,026	494	44
Department of Agriculture	26,528	17,380	0	0	9,148	0	0	18
Department of Commerce	119	0	0	0	21	0	98	52
Department of Defense	7,996	1,183	0	4,348	2,465	0	0	48
Department of Energy	861	0	0	0	861	0	0	47
Department of Health & Human Services	28,627	4	0	918	22,615	5,026	64	39
Department of Interior	5,311	5,174	0	0	137	0	0	30
Department of Transportation	587	0	0	62	193	0	332	43
Environmental Protection Agency	0	0	0	0	0	0	0	na
National Aeronautics & Space Admin	2,355	0	0	312	2,043	0	0	42
National Science Foundation	10,597	0	0	121	10,476	0	0	38
State rank, total	44	44	na	49	38	33	46	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources – see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

Nevada

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	1,575	483,162	47	Total R&D performance, 1997 (millions)	$517	$199,110	39
Doctoral engineers, 1997[1]	357	97,075	40	Industry R&D, 1997 (millions)	$380	$150,329	37
S&E doctorates awarded, 1998[1]	68	27,272	43	Academic R&D, 1997 (millions)	$88	$23,740	41
of which, in environmental sciences	25%	3%		of which, in life sciences	32%	56%	
in life sciences	19%	25%		in environmental sciences	28%	6%	
in psychology	18%	13%		in physical sciences	8%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	41	37,928	46	expenditures, 1996 (millions)	$515	$189,626	47
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	73	35,413	37
in doctorate-granting institutions	1,627	424,650	41	Patents issued to State residents, 1998	270	80,287	39
Population, 1998 (000s)	1,747	274,153	37	Gross State product, 1997 (billions)	$57	$8,152	34
Civilian labor force, 1998 (000s)	920	139,125	36	of which, agriculture	1%	2%	
				manufacturing, mining, construction	16%	23%	
Personal income per capita, 1998	$27,200	$26,412	15	transportation, communication, utilities	8%	8%	
				wholesale and retail trade	15%	16%	
Federal spending				finance, insurance, real estate	19%	19%	
Total expenditures, 1998 (millions)	$7,566	$1,453,884	41	services	33%	20%	
R&D obligations, 1997 (millions)	$295	$68,424	30	government	10%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

	Performer							
Agency	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	295,042	46,025	0	224,446	21,714	2,188	669	30
Department of Agriculture	2,214	438	0	80	1,664	32	0	51
Department of Commerce	161	59	0	2	100	0	0	51
Department of Defense	32,700	22,240	0	9,753	707	0	0	35
Department of Energy	208,845	0	0	205,675	2,249	921	0	8
Department of Health & Human Services	9,364	0	0	402	7,311	1,235	416	46
Department of Interior	10,716	10,221	0	0	495	0	0	14
Department of Transportation	6,583	0	0	6,330	0	0	253	17
Environmental Protection Agency	15,141	12,867	0	1,292	982	0	0	8
National Aeronautics & Space Admin.	1,517	200	0	636	681	0	0	46
National Science Foundation	7,801	0	0	276	7,525	0	0	44
State rank, total	30	32	na	20	48	44	44	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

New Hampshire

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	2,126	483,162	42	Total R&D performance, 1997 (millions)	$799	$199,110	35
Doctoral engineers, 1997[1]	462	97,075	37	Industry R&D, 1997 (millions)	$652	$150,329	32
S&E doctorates awarded, 1998[1]	97	27,272	41	Academic R&D, 1997 (millions)	$108	$23,740	39
of which, in life sciences	39%	25%		of which, in life sciences	48%	56%	
in physical sciences	27%	14%		in environmental sciences	24%	6%	
in engineering	10%	22%		in engineering	9%	16%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	111	37,928	37	expenditures, 1996 (millions)	$925	$189,626	40
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	401	35,413	23
in doctorate-granting institutions	1,378	424,650	45	Patents issued to State residents, 1998	610	80,287	28
Population, 1998 (000s)	1,185	274,153	43	Gross State product, 1997 (billions)	$38	$8,152	41
Civilian labor force, 1998 (000s)	652	139,125	41	of which, agriculture	1%	2%	
				manufacturing, mining, construction	28%	23%	
Personal income per capita, 1998	$29,022	$26,412	8	transportation, communication, utilities	7%	8%	
				wholesale and retail trade	15%	16%	
Federal spending				finance, insurance, real estate	22%	19%	
Total expenditures, 1998 (millions)	$5,272	$1,453,884	46	services	18%	20%	
R&D obligations, 1997 (millions)	$279	$68,424	32	government	8%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	278,697	36,861	0	172,829	66,405	2,235	367	32
Department of Agriculture	4,399	2,071	0	0	2,310	7	11	49
Department of Commerce	3,094	188	0	1,662	1,244	0	0	29
Department of Defense	203,657	31,964	0	163,756	5,928	2,009	0	23
Department of Energy	921	0	0	0	921	0	0	46
Department of Health & Human Services	39,531	4	0	2,994	36,145	196	192	35
Department of Interior	1,615	1,489	0	0	126	0	0	51
Department of Transportation	574	398	0	35	0	0	141	44
Environmental Protection Agency	1,151	0	0	0	1,151	0	0	34
National Aeronautics & Space Admin.	11,927	122	0	3,684	8,075	23	23	28
National Science Foundation	11,828	625	0	698	10,505	0	0	35
State rank, total	32	36	na	21	33	43	48	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles"

New Jersey

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	18,189	483,162	8	Total R&D performance, 1997 (millions)	$12,067	$199,110	4
Doctoral engineers, 1997[1]	4,232	97,075	6	Industry R&D, 1997 (millions)	$11,069	$150,329	3
S&E doctorates awarded, 1998[1]	562	27,272	16	Academic R&D, 1997 (millions)	$462	$23,740	16
of which, in engineering	25%	22%		of which, in life sciences	47%	56%	
in life sciences	23%	25%		in engineering	18%	16%	
in physical sciences	15%	14%		in physical sciences	12%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	638	37,928	19	expenditures, 1996 (millions)	$4,369	$189,626	13
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	1,107	35,413	9
in doctorate-granting institutions	10,432	424,650	11	Patents issued to State residents, 1998	3,770	80,287	4
Population, 1998 (000s)	8,115	274,153	9	Gross State product, 1997 (billions)	$294	$8,152	8
Civilian labor force, 1998 (000s)	4,155	139,125	9	of which, agriculture	1%	2%	
				manufacturing, mining, construction	18%	23%	
Personal income per capita, 1998	$33,937	$26,412	3	transportation, communication, utilities	10%	8%	
				wholesale and retail trade	17%	16%	
Federal spending				finance, insurance, real estate	23%	19%	
Total expenditures, 1998 (millions)	$40,373	$1,453,884	11	services	22%	20%	
R&D obligations, 1997 (millions)	$1,319	$68,424	15	government	10%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	1,318,793	459,286	54,446	588,294	198,521	15,641	2,605	15
Department of Agriculture	5,682	25	0	110	5,543	0	4	46
Department of Commerce	39,083	14,400	0	20,877	3,207	599	0	6
Department of Defense	864,900	393,639	2,093	439,713	29,432	23	0	11
Department of Energy	79,324	0	52,353	13,221	13,435	315	0	14
Department of Health & Human Services	108,475	9	0	9,247	86,817	10,740	1,662	24
Department of Interior	7,205	6,253	0	846	106	0	0	20
Department of Transportation	66,402	43,137	0	18,039	4,287	0	939	2
Environmental Protection Agency	3,794	0	0	440	1,035	2,319	0	21
National Aeronautics & Space Admin.	94,717	1,657	0	82,518	10,362	180	0	11
National Science Foundation	49,211	166	0	3,283	44,297	1,465	0	15
State rank, total	15	9	12	14	20	22	25	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section "Data Sources for Science and Engineering (S&E) State Profiles"

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New Mexico

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	6,446	483,162	25	Total R&D performance, 1997 (millions)	$3,028	$199,110	19
Doctoral engineers, 1997[1]	2,124	97,075	14	Industry R&D, 1997 (millions)	$1,310	$150,329	21
S&E doctorates awarded, 1998[1]	202	27,272	33	Academic R&D, 1997 (millions)	$219	$23,740	29
of which, in engineering	28%	22%		of which, in engineering	42%	16%	
in life sciences	21%	25%		in life sciences	25%	56%	
in physical sciences	19%	14%		in physical sciences	6%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	66	37,928	43	expenditures, 1996 (millions)	$1,361	$189,626	36
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	686	35,413	15
in doctorate-granting institutions	3,252	424,650	34	Patents issued to State residents, 1998	343	80,287	36
Population, 1998 (000s)	1,737	274,153	38	Gross State product, 1997 (billions)	$45	$8,152	39
Civilian labor force, 1998 (000s)	831	139,125	38	of which, agriculture	2%	2%	
				manufacturing, mining, construction	29%	23%	
Personal income per capita, 1998	$19,936	$26,412	49	transportation, communication, utilities	7%	8%	
				wholesale and retail trade	14%	16%	
Federal spending				finance, insurance, real estate	14%	19%	
Total expenditures, 1998 (millions)	$12,933	$1,453,884	35	services	17%	20%	
R&D obligations, 1997 (millions)	$1,933	$68,424	11	government	17%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

	Performer							
Agency	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	1,933,123	366,253	1,210,714	252,260	92,218	10,362	1,316	11
Department of Agriculture	7,165	3,328	0	0	3,831	6	0	42
Department of Commerce	548	0	3	412	0	133	0	42
Department of Defense	675,057	334,298	99,375	214,136	26,249	999	0	13
Department of Energy	1,117,476	10,169	1,090,900	9,360	3,557	3,490	0	1
Department of Health & Human Services	49,410	1,032	13,447	2,723	27,279	4,020	909	33
Department of Interior	6,329	6,101	0	67	161	0	0	28
Department of Transportation	12,345	0	5,922	3,529	2,487	0	407	9
Environmental Protection Agency	671	0	0	271	200	200	0	40
National Aeronautics & Space Admin	51,401	11,220	971	20,043	18,750	417	0	14
National Science Foundation	12,721	105	96	1,719	9,704	1,097	0	34
State rank, total	11	10	2	19	31	27	34	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources – see the section, "Data Sources for Science and Engineering (S&E) State Profiles"

New York

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	37,841	483,162	2	Total R&D performance, 1997 (millions)	$12,307	$199,110	3
Doctoral engineers, 1997[1]	6,009	97,075	3	Industry R&D, 1997 (millions)	$9,939	$150,329	4
S&E doctorates awarded, 1998[1]	2,377	27,272	2	Academic R&D, 1997 (millions)	$1,784	$23,740	2
of which, in life sciences	26%	25%		of which, in life sciences	66%	56%	
in social sciences	18%	15%		in engineering	11%	16%	
in psychology	17%	13%		in physical sciences	9%	10%	
S&E postdoctorates, 1997[1]				Higher education current fund			
in doctorate-granting institutions	3,094	37,928	3	expenditures, 1996 (millions)	$17,801	$189,626	2
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	1,606	35,413	5
in doctorate-granting institutions	37,883	424,650	2	Patents issued to State residents, 1998	6,319	80,287	2
Population, 1998 (000s)	18,175	274,153	3	Gross State product, 1997 (billions)	$652	$8,152	2
Civilian labor force, 1998 (000s)	8,870	139,125	3	of which, agriculture	0%	2%	
				manufacturing, mining, construction	14%	23%	
Personal income per capita, 1998	$31,734	$26,412	5	transportation, communication, utilities	8%	8%	
				wholesale and retail trade	13%	16%	
Federal spending				finance, insurance, real estate	31%	19%	
Total expenditures, 1998 (millions)	$99,766	$1,453,884	2	services	23%	20%	
R&D obligations, 1997 (millions)	$2,471	$63,424	8	government	11%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

	Performer							
Agency	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	2,471,213	136,215	216,934	770,608	1,062,686	208,675	76,095	8
Department of Agriculture	33,864	15,848	0	172	16,528	1,316	0	13
Department of Commerce	12,554	641	13	5,008	6,239	653	0	20
Department of Defense	621,407	100,122	677	461,269	55,482	3,857	0	14
Department of Energy	516,968	5,289	211,221	246,080	51,901	2,477	0	3
Department of Health & Human Services	1,015,997	2,239	3,845	26,778	720,661	188,505	73,969	4
Department of Interior	9,181	8,858	0	59	264	0	0	16
Department of Transportation	7,939	0	0	5,607	0	428	1,904	16
Environmental Protection Agency	8,990	0	0	2,170	4,696	2,124	0	17
National Aeronautics & Space Admin	50,219	3,218	30	18,715	27,401	825	30	15
National Science Foundation	194,094	0	1,148	4,750	179,514	8,490	192	2
State rank, total	8	20	6	12	2	3	1	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources – see the section, "Data Sources for Science and Engineering (S&E) State Profiles."

North Carolina

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	13,651	483,162	11	Total R&D performance, 1997 (millions)	$4,667	$199,110	13
Doctoral engineers, 1997[1]	1,832	97,075	15	Industry R&D, 1997 (millions)	$3,590	$150,329	11
S&E doctorates awarded, 1998[1]	740	27,272	10	Academic R&D, 1997 (millions)	$786	$23,740	9
of which, in life sciences	32%	25%		of which, in life sciences	71%	56%	
in engineering	19%	22%		in engineering	10%	16%	
in physical sciences	14%	14%		in social sciences	5%	4%	
S&E postdoctorates, 1997[1]				Higher education current fund			
in doctorate-granting institutions	1,339	37,928	7	expenditures, 1996 (millions)	$5,979	$189,626	9
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	409	35,413	22
in doctorate-granting institutions	9,655	424,650	12	Patents issued to State residents, 1998	1,614	80,287	15
Population, 1998 (000s)	7,546	274,153	11	Gross State product, 1997 (billions)	$219	$8,152	12
Civilian labor force, 1998 (000s)	3,794	139,125	11	of which, agriculture	2%	2%	
				manufacturing, mining, construction	31%	23%	
Personal income per capita, 1998	$24,036	$26,412	32	transportation, communication, utilities	8%	8%	
				wholesale and retail trade	15%	16%	
Federal spending				finance, insurance, real estate	15%	19%	
Total expenditures, 1998 (millions)	$35,677	$1,453,884	14	services	16%	20%	
R&D obligations, 1997 (millions)	$901	$68,424	19	government	13%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

	Performer							
Agency	Total	Federal intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[in thousands of dollars]							
Total, all agencies	900,947	229,610	0	132,887	468,601	61,427	8,422	19
Department of Agriculture	30,130	14,240	0	5	15,857	19	9	16
Department of Commerce	20,300	4,963	0	12,055	2,694	160	428	11
Department of Defense	150,960	51,497	0	67,639	30,115	1,235	474	27
Department of Energy	13,267	308	0	49	11,148	1,762	0	28
Department of Health & Human Services	481,292	70,151	0	21,704	344,107	43,553	1,777	7
Department of Interior	6,761	6,100	0	309	352	0	0	21
Department of Transportation	8,257	0	0	0	1,773	750	5,734	15
Environmental Protection Agency	125,216	82,351	0	27,352	8,253	7,260	0	1
National Aeronautics & Space Admin	15,173	–0	0	1,026	9,125	5,022	0	26
National Science Foundation	49,591	0	0	2,748	45,177	1,666	0	14
State rank, total	19	12	na	26	7	11	3	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

North Dakota

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	1,360	483,162	48	Total R&D performance, 1997 (millions)	$116	$199,110	49
Doctoral engineers, 1997[1]	205	97,075	46	Industry R&D, 1997 (millions)	$33	$150,329	48
S&E doctorates awarded, 1998	58	27,272	46	Academic R&D, 1997 (millions)	$56	$23,740	49
of which, in life sciences	52%	25%		of which, in life sciences	54%	56%	
in psychology	21%	13%		in engineering	27%	16%	
in physical sciences	12%	14%		in physical sciences	8%	10%	
S&E postdoctorates, 1997				Higher education current fund			
in doctorate-granting institutions	52	37,928	44	expenditures, 1996 (millions)	$486	$189,626	46
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	31	35,413	46
in doctorate-granting institutions	1,070	424,650	48	Patents issued to State residents, 1998	65	80,287	48
Population, 1998 (000s)	638	274,153	48	Gross State product, 1997 (billions)	$16	$8,152	51
Civilian labor force, 1998 (000s)	347	139,125	48	of which, agriculture	7%	2%	
				manufacturing, mining, construction	17%	23%	
Personal income per capita, 1998	$21,675	$26,412	39	transportation, communication, utilities	10%	8%	
				wholesale and retail trade	19%	16%	
Federal spending				finance, insurance, real estate	13%	19%	
Total expenditures, 1998 (millions)	$4,131	$1,453,884	49	services	18%	20%	
R&D obligations, 1997 (millions)	$53	$68,424	48	government	15%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

	Performer							
Agency	Total	Federal intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	53,015	26,401	0	312	23,655	449	2,198	48
Department of Agriculture	25,018	19,468	0	0	5,550	0	0	19
Department of Commerce	358	0	0	0	358	0	0	45
Department of Defense	2,234	491	0	0	1,743	0	0	50
Department of Energy	3,746	0	0	0	3,746	0	0	37
Department of Health & Human Services	3,540	0	0	7	2,819	449	265	48
Department of Interior	6,485	6,442	0	3	20	0	20	25
Department of Transportation	5,843	0	0	86	3,844	0	1,913	19
Environmental Protection Agency	2,310	0	0	0	2,310	0	0	25
National Aeronautics & Space Admin.	1,000	0	0	65	935	0	0	48
National Science Foundation	2,481	0	0	151	2,330	0	0	52
State rank, total	48	42	na	51	46	50	31	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources – see the section, "Data Sources for Science and Engineering (S&E) State Profiles."

Ohio

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	16,656	483,162	9	Total R&D performance, 1997 (millions)	$7,145	$199,110	11
Doctoral engineers, 1997[1]	4,328	97,075	4	Industry R&D, 1997 (millions)	$5,608	$150,329	10
S&E doctorates awarded, 1998[1]	1,124	27,272	7	Academic R&D, 1997 (millions)	$764	$23,740	11
of which, in engineering	27%	22%		of which, in life sciences	55%	56%	
in life sciences	24%	25%		in engineering	24%	16%	
in physical sciences	17%	14%		in physical sciences	8%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	1,000	37,928	11	expenditures, 1996 (millions)	$6,842	$189,626	7
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	1,100	35,413	10
in doctorate-granting institutions	19,424	424,650	7	Patents issued to State residents, 1998	3,273	80,287	9
Population, 1998 (000s)	11,209	274,153	7	Gross State product, 1997 (billions)	$321	$8,152	7
Civilian labor force, 1998 (000s)	5,678	139,125	7	of which, agriculture	1%	2%	
				manufacturing, mining, construction	30%	23%	
Personal income per capita, 1998	$25,134	$26,412	22	transportation, communication, utilities	7%	8%	
				wholesale and retail trade	17%	16%	
Federal spending				finance, insurance, real estate	16%	19%	
Total expenditures, 1998 (millions)	$52,006	$1,453,884	8	services	18%	20%	
R&D obligations, 1997 (millions)	$1,880	$68,424	13	government	10%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	1,879,784	681,170	0	776,770	327,760	91,782	2,302	13
Department of Agriculture	15,303	6,376	0	10	8,876	34	7	33
Department of Commerce	10,267	72	0	8,853	938	404	0	22
Department of Defense	943,438	382,878	0	513,885	28,991	17,684	0	10
Department of Energy	17,781	0	0	10,187	7,594	0	0	26
Department of Health & Human Services	326,484	32,593	0	11,747	223,213	58,258	673	9
Department of Interior	3,635	3,394	0	11	230	0	0	41
Department of Transportation	12,712	4,377	0	5,009	1,869	70	1,387	8
Environmental Protection Agency	61,580	48,896	0	6,279	2,313	4,092	0	3
National Aeronautics & Space Admin	448,477	202,584	0	219,620	15,052	10,986	235	7
National Science Foundation	40,107	0	0	1,169	38,684	254	0	19
State rank, total	13	5	na	10	11	9	29	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles"

Oklahoma

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	4,220	483,162	31	Total R&D performance, 1997 (millions)	$644	$199,110	36
Doctoral engineers, 1997[1]	1,086	97,075	27	Industry R&D, 1997 (millions)	$428	$150,329	36
S&E doctorates awarded, 1998[1]	217	27,272	31	Academic R&D, 1997 (millions)	$163	$23,740	34
of which, in engineering	26%	22%		of which, in life sciences	42%	56%	
in life sciences	25%	25%		in engineering	19%	16%	
in psychology	14%	13%		in environmental sciences	12%	6%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	191	37,928	32	expenditures, 1996 (millions)	$1,656	$189,626	33
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	98	35,413	32
in doctorate-granting institutions	4,254	424,650	30	Patents issued to State residents, 1998	488	80,287	30
Population, 1998 (000s)	3,347	274,153	28	Gross State product, 1997 (billions)	$77	$8,152	30
Civilian labor force, 1998 (000s)	1,627	139,125	29	of which, agriculture	3%	2%	
				manufacturing, mining, construction	25%	23%	
Personal income per capita, 1998	$21,072	$26,412	45	transportation, communication, utilities	10%	8%	
				wholesale and retail trade	16%	16%	
Federal spending				finance, insurance, real estate	13%	19%	
Total expenditures, 1998 (millions)	$18,205	$1,453,884	29	services	18%	20%	
R&D obligations, 1997 (millions)	$160	$68,424	39	government	16%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	160,356	44,238	0	53,782	52,831	8,646	859	39
Department of Agriculture	17,271	9,370	0	0	7,901	0	0	29
Department of Commerce	8,075	7,336	0	588	151	0	0	24
Department of Defense	38,219	6,674	0	27,734	3,771	0	40	33
Department of Energy	28,522	1,490	0	23,658	3,069	305	0	22
Department of Health & Human Services	32,408	9	0	112	24,052	8,116	119	37
Department of Interior	1,763	3,500	0	0	263	0	0	39
Department of Transportation	9,808	8,081	0	1,027	0	0	700	14
Environmental Protection Agency	9,088	7,720	0	117	1,251	0	0	16
National Aeronautics & Space Admin.	2,049	58	0	310	1,681	0	0	43
National Science Foundation	11,153	0	0	236	10,692	225	0	37
State rank, total	39	33	na	32	37	29	41	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

Oregon

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	6,471	483,162	24	Total R&D performance, 1997 (millions)	$1,520	$199,110	27
Doctoral engineers, 1997[1]	1,127	97,075	26	Industry R&D, 1997 (millions)	$1,102	$150,329	26
S&E doctorates awarded, 1998[1]	283	27,272	29	Academic R&D, 1997 (millions)	$291	$23,740	27
of which, in life sciences	43%	25%		of which, in life sciences	65%	56%	
in engineering	13%	22%		in environmental sciences	12%	6%	
in physical sciences	13%	14%		in engineering	7%	16%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	318	37,928	27	expenditures, 1996 (millions)	$2,205	$189,626	28
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	466	35,413	20
in doctorate-granting institutions	4,107	424,650	31	Patents issued to State residents, 1998	1,184	80,287	21
Population, 1998 (000s)	3,282	274,153	29	Gross State product, 1997 (billions)	$98	$8,152	27
Civilian labor force, 1998 (000s)	1,762	139,125	27	of which, agriculture	3%	2%	
				manufacturing, mining, construction	30%	23%	
Personal income per capita, 1998	$24,766	$26,412	27	transportation, communication, utilities	7%	8%	
				wholesale and retail trade	16%	16%	
Federal spending				finance, insurance, real estate	15%	19%	
Total expenditures, 1998 (millions)	$15,119	$1,453,884	31	services	17%	20%	
R&D obligations, 1997 (millions)	$320	$68,424	29	government	11%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

	Performer							
Agency	Total	Federal intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	319,587	90,017	0	28,339	157,943	37,112	6,176	29
Department of Agriculture	37,697	22,609	0	82	14,714	278	14	10
Department of Commerce	20,875	15,548	0	1,657	2,465	0	1,205	10
Department of Defense	22,991	635	0	12,104	10,252	0	0	38
Department of Energy	46,084	28,695	0	135	16,954	300	0	19
Department of Health & Human Services	121,710	13	0	7,500	73,740	36,129	4,328	23
Department of Interior	9,802	9,605	0	94	103	0	0	15
Department of Transportation	1,622	0	0	385	608	0	629	30
Environmental Protection Agency	21,840	12,867	0	4,058	4,815	100	0	4
National Aeronautics & Space Admin.	6,565	0	0	1,223	5,134	208	0	35
National Science Foundation	30,401	45	0	1,101	29,158	97	0	23
State rank, total	29	23	na	38	24	14	8	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles."

Pennsylvania

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997*	22,375	483,162	4	Total R&D performance, 1997 (millions)	$8,209	$199,110	7
Doctoral engineers, 1997*	4,322	97,075	5	Industry R&D, 1997 (millions)	$6,609	$150,329	8
S&E doctorates awarded, 1998	1,364	27,272	6	Academic R&D, 1997 (millions)	$1,241	$23,740	6
of which, in engineering	30%	22%		of which, in life sciences	57%	56%	
in life sciences	20%	25%		in engineering	17%	16%	
in social sciences	17%	15%		in mathematics and computer sciences	7%	4%	
S&E postdoctorates, 1997*				Higher education current fund			
in doctorate-granting institutions	2,319	37,928	5	expenditures, 1996 (millions)	$11,305	$189,626	3
S&E graduate students, 1997*				Number of SBIR awards, 1990-98	1,178	35,413	8
in doctorate-granting institutions	19,667	424,650	6	Patents issued to State residents, 1998	3,369	80,287	8
Population, 1998 (000s)	12,001	274,153	6	Gross State product, 1997 (billions)	$340	$8,152	6
Civilian labor force, 1998 (000s)	5,936	139,125	6	of which, agriculture	1%	2%	
				manufacturing, mining, construction	25%	23%	
Personal income per capita, 1998	$26,792	$26,412	17	transportation, communication, utilities	9%	8%	
				wholesale and retail trade	15%	16%	
Federal spending				finance, insurance, real estate	19%	19%	
Total expenditures, 1998 (millions)	$67,350	$1,453,884	5	services	22%	20%	
R&D obligations, 1997 (millions)	$1,894	$68,424	12	government	10%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

* Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Total	Federal intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	1,893,867	151,216	16,395	775,429	767,992	175,456	7,379	12
Department of Agriculture	40,848	28,859	0	0	11,730	259	0	9
Department of Commerce	27,121	240	0	24,089	1,327	850	615	9
Department of Defense	614,966	52,505	16,395	425,169	90,231	30,666	0	15
Department of Energy	351,742	42,843	0	277,311	21,035	5,363	5,190	5
Department of Health & Human Services	684,859	17,778	0	13,792	529,543	123,649	97	5
Department of Interior	8,710	7,828	0	109	758	15	0	18
Department of Transportation	6,213	70	0	2,604	2,062	0	1,477	18
Environmental Protection Agency	6,343	0	0	809	5,200	334	0	19
National Aeronautics & Space Admin	49,464	1,093	0	30,402	16,480	1,489	0	16
National Science Foundation	103,601	0	0	1,144	89,626	12,831	0	6
State rank, total	12	18	17	11	4	5	4	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources – see the section, "Data Sources for Science and Engineering (S&E) State Profiles."

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Puerto Rico

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	612	483,162	52	Total R&D performance, 1997 (millions)	na	$199,110	na
Doctoral engineers, 1997[1]	160	97,075	49	Industry R&D, 1997 (millions)	na	$150,329	na
S&E doctorates awarded, 1998[1]	68	27,272	43	Academic R&D, 1997 (millions)	$76	$23,740	42
of which, in psychology	82%	13%		of which, in life sciences	76%	56%	
in life sciences	9%	25%		in engineering	7%	16%	
in physical sciences	4%	14%		in environmental sciences	7%	6%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	14	37,928	50	expenditures, 1996 (millions)	$1,035	$189,626	39
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	3	35,413	52
in doctorate-granting institutions	2,737	424,650	37	Patents issued to State residents, 1998	20	80,287	52
Population, 1998 (000s)	3,857	274,153	26	Gross State product, 1997 (billions)	$49	$8,152	38
Civilian labor force, 1998 (000s)	1,311	139,125	32	of which, agriculture	1%	2%	
				manufacturing, mining, construction	43%	23%	
Personal income per capita, 1998	$8,817	$26,412	52	transportation, communication, utilities	8%	8%	
				wholesale and retail trade	13%	16%	
Federal spending				finance, insurance, real estate	13%	19%	
Total expenditures, 1998 (millions)	$11,119	$1,453,884	36	services	11%	20%	
R&D obligations, 1997 (millions)	$59	$68,424	47	government	11%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	58,943	11,011	8,244	59	38,803	10	816	47
Department of Agriculture	9,307	5,025	0	10	4,262	10	0	38
Department of Commerce	363	0	0	0	363	0	0	44
Department of Defense	2,023	1	0	17	2,005	0	0	51
Department of Energy	784	0	0	0	784	0	0	48
Department of Health & Human Services	25,181	858	0	0	23,704	0	619	42
Department of Interior	5,178	5,127	0	0	51	0	0	31
Department of Transportation	197	0	0	0	0	0	197	51
Environmental Protection Agency	85	0	0	0	85	0	0	46
National Aeronautics & Space Admin	1,742	0	0	0	1,742	0	0	0
National Science Foundation	14,083	0	8,244	32	5,807	0	0	31
State rank, total	47	47	18	52	40	52	42	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

Rhode Island

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	2,184	483,162	41	Total R&D performance, 1997 (millions)	$1,040	$199,110	32
Doctoral engineers, 1997[1]	518	97,075	36	Industry R&D, 1997 (millions)	$704	$150,329	31
S&E doctorates awarded, 1998[1]	183	27,272	36	Academic R&D, 1997 (millions)	$112	$23,740	38
of which, in physical sciences	23%	14%		of which, in life sciences	31%	56%	
in social sciences	17%	15%		in environmental sciences	25%	6%	
in mathematics and computer sciences	13%	8%		in engineering	12%	16%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	155	37,928	33	expenditures, 1996 (millions)	$1,060	$189,626	38
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	94	35,413	33
in doctorate-granting institutions	1,777	424,650	40	Patents issued to State residents, 1998	280	80,287	38
Population, 1998 (000s)	988	274,153	44	Gross State product, 1997 (billions)	$28	$8,152	46
Civilian labor force, 1998 (000s)	498	139,125	44	of which, agriculture	1%	2%	
				manufacturing, mining, construction	19%	23%	
Personal income per capita, 1998	$26,797	$26,412	16	transportation, communication, utilities	7%	8%	
				wholesale and retail trade	14%	16%	
Federal spending				finance, insurance, real estate	25%	19%	
Total expenditures, 1998 (millions)	$6,039	$1,453,884	43	services	22%	20%	
R&D obligations, 1997 (millions)	$404	$68,424	26	government	12%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	403,844	202,192	0	112,220	66,291	22,121	1,020	26
Department of Agriculture	1,948	2	0	0	1,902	44	0	52
Department of Commerce	4,954	1,075	0	1,650	2,219	10	0	27
Department of Defense	307,758	188,965	0	108,377	10,325	91	0	20
Department of Energy	2,855	0	0	0	2,847	8	0	41
Department of Health & Human Services	49,652	0	0	1,700	26,159	20,948	845	32
Department of Interior	1,732	1,238	0	0	489	5	0	50
Department of Transportation	796	438	0	183	0	0	175	41
Environmental Protection Agency	10,753	10,296	0	57	400	0	0	13
National Aeronautics & Space Admin	3,573	178	0	243	2,894	258	0	39
National Science Foundation	19,823	0	0	10	19,056	757	0	26
State rank, total	26	— 14	na	28	34	19	37	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

South Carolina

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	4,762	483,162	29	Total R&D performance, 1997 (millions)	$1,040	$199,110	32
Doctoral engineers, 1997[1]	798	97,075	31	Industry R&D, 1997 (millions)	$783	$150,329	30
S&E doctorates awarded, 1998[1]	211	27,272	32	Academic R&D, 1997 (millions)	$219	$23,740	30
of which, in life sciences	36%	25%		of which, in life sciences	53%	56%	
in engineering	18%	22%		in engineering	18%	16%	
in physical sciences	13%	14%		in environmental sciences	7%	6%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	249	37,928	30	expenditures, 1996 (millions)	$2,261	$189,626	27
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	42	35,413	44
in doctorate-granting institutions	3,931	424,650	32	Patents issued to State residents, 1998	570	80,287	29
Population, 1998 (000s)	3,836	274,153	27	Gross State product, 1997 (billions)	$93	$8,152	28
Civilian labor force, 1998 (000s)	1,959	139,125	25	of which, agriculture	1%	2%	
				manufacturing, mining, construction	30%	23%	
Personal income per capita, 1998	$21,309	$26,412	43	transportation, communication, utilities	8%	8%	
				wholesale and retail trade	17%	16%	
Federal spending				finance, insurance, real estate	14%	19%	
Total expenditures, 1998 (millions)	$19,870	$1,453,884	27	services	16%	20%	
R&D obligations, 1997 (millions)	$167	$68,424	38	government	15%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	166,607	34,019	17,184	13,252	94,954	3,799	3,399	38
Department of Agriculture	14,399	7,998	0	0	6,351	50	0	34
Department of Commerce	14,342	6,538	0	5,289	2,246	269	0	17
Department of Defense	48,242	16,142	9	6,040	24,293	1,758	0	32
Department of Energy	29,922	6	17,175	500	10,825	1,416	0	21
Department of Health & Human Services	39,756	4	0	1,189	35,537	250	2,776	34
Department of Interior	3,432	3,331	0	46	45	10	0	42
Department of Transportation	924	0	0	41	305	0	578	37
Environmental Protection Agency	1,239	0	0	0	1,239	0	0	32
National Aeronautics & Space Admin	2,829	0	0	60	2,769	0	0	41
National Science Foundation	11,522	0	0	87	11,344	46	45	36
State rank, total	38	38	16	42	30	36	23	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section "Data Sources for Science and Engineering (S&E) State Profiles".

South Dakota

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	1,048	483,162	50	Total R&D performance, 1997 (millions)	$71	$199,110	51
Doctoral engineers, 1997[1]	103	97,075	52	Industry R&D, 1997 (millions)	$26	$150,329	50
S&E doctorates awarded, 1998[1]	24	27,272	52	Academic R&D, 1997 (millions)	$25	$23,740	52
of which, in psychology	33%	13%		of which, in life sciences	60%	56%	
in life sciences	33%	25%		in environmental sciences	14%	6%	
in social sciences	17%	15%		in engineering	10%	16%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	12	37,928	52	expenditures, 1996 (millions)	$336	$189,626	51
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	28	35,413	48
in doctorate-granting institutions	1,161	424,650	46	Patents issued to State residents, 1998	50	80,287	50
Population, 1998 (000s)	738	274,153	47	Gross State product, 1997 (billions)	$20	$8,152	48
Civilian labor force, 1998 (000s)	398	139,125	46	of which, agriculture	9%	2%	
				manufacturing, mining, construction	18%	23%	
Personal income per capita, 1998	$22,114	$26,412	38	transportation, communication, utilities	8%	8%	
				wholesale and retail trade	16%	16%	
Federal spending				finance, insurance, real estate	21%	19%	
Total expenditures, 1998 (millions)	$4,319	$1,453,884	46	services	16%	20%	
R&D obligations, 1997 (millions)	$42	$68,424	51	government	12%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	41,955	19,307	0	6,480	14,075	1,500	593	51
Department of Agriculture	6,967	3,676	0	0	3,291	0	0	44
Department of Commerce	334	70	0	0	55	0	209	46
Department of Defense	3,015	585	0	480	1,950	0	0	49
Department of Energy	79	0	0	79	0	0	0	50
Department of Health & Human Services	2,855	766	0	380	1,584	0	125	49
Department of Interior	12,347	7,332	0	4,887	128	0	0	10
Department of Transportation	367	0	0	108	0	0	259	49
Environmental Protection Agency	0	0	0	0	0	0	0	na
National Aeronautics & Space Admin	8,905	6,878	0	102	425	1,500	0	31
National Science Foundation	7,086	0	0	444	6,642	0	0	46
State rank, total	51	45	na	47	50	46	45	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

Tennessee

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	8,065	483,162	21	Total R&D performance, 1997 (millions)	$1,566	$199,110	26
Doctoral engineers, 1997[1]	1,500	97,075	18	Industry R&D, 1997 (millions)	$1,089	$150,329	27
S&E doctorates awarded, 1998[1]	333	27,272	25	Academic R&D, 1997 (millions)	$330	$23,740	26
of which, in life sciences	33%	25%		of which, in life sciences	61%	56%	
in engineering	19%	22%		in engineering	16%	16%	
in social sciences	16%	15%		in physical sciences	7%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	570	37,928	21	expenditures, 1996 (millions)	$3,588	$189,626	19
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	341	35,413	24
in doctorate-granting institutions	7,154	424,650	20	Patents issued to State residents, 1998	783	80,287	25
Population, 1998 (000s)	5,431	274,153	17	Gross State product, 1997 (billions)	$147	$8,152	20
Civilian labor force, 1998 (000s)	2,760	139,125	18	of which, agriculture	1%	2%	
				manufacturing, mining, construction	26%	23%	
Personal income per capita, 1998	$23,559	$26,412	34	transportation, communication, utilities	8%	8%	
				wholesale and retail trade	19%	16%	
Federal spending				finance, insurance, real estate	14%	17%	
Total expenditures, 1998 (millions)	$30,497	$1,453,884	17	services	20%	20%	
R&D obligations, 1997 (millions)	$566	$68,424	24	government	12%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	566,242	77,836	237,525	44,089	179,732	25,583	1,477	24
Department of Agriculture	7,961	1	0	0	7,960	0	0	40
Department of Commerce	1,198	811	8	0	379	0	0	38
Department of Defense	93,423	62,585	4,864	15,772	10,202	0	0	30
Department of Energy	248,998	1,166	229,057	10,872	7,793	110	0	7
Department of Health & Human Services	160,546	1,276	276	1,962	131,659	25,373	0	19
Department of Interior	4,403	3,986	0	17	400	0	0	35
Department of Transportation	2,617	933	120	24	188	0	1,352	28
Environmental Protection Agency	1,203	0	0	339	864	0	0	33
National Aeronautics & Space Admin	28,629	6,829	3,050	13,244	5,381	0	125	19
National Science Foundation	17,264	249	150	1,859	14,906	100	0	29
State rank, total	24	25	5	33	23	18	32	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles"

Texas

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	24,871	483,162	3	Total R&D performance, 1997 (millions)	$9,487	$199,110	6
Doctoral engineers, 1997[1]	6,725	97,075	2	Industry R&D, 1997 (millions)	$7,265	$150,329	6
S&E doctorates awarded, 1998[1]	1,667	27,272	3	Academic R&D, 1997 (millions)	$1,581	$23,740	3
of which, in life sciences	27%	25%		of which, in life sciences	60%	56%	
in engineering	24%	22%		in engineering	17%	16%	
in psychology	13%	13%		in environmental sciences	8%	6%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	2,354	37,928	4	expenditures, 1996 (millions)	$10,360	$189,626	4
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	1,253	35,413	7
in doctorate-granting institutions	27,481	424,650	3	Patents issued to State residents, 1998	5,575	80,287	3
Population, 1998 (000s)	19,760	274,153	2	Gross State product, 1997 (billions)	$602	$8,152	3
Civilian labor force, 1998 (000s)	10,118	139,125	2	of which, agriculture	1%	2%	
				manufacturing, mining, construction	27%	23%	
Personal income per capita, 1998	$24,957	$26,412	26	transportation, communication, utilities	11%	8%	
				wholesale and retail trade	16%	16%	
Federal spending				finance, insurance, real estate	15%	19%	
Total expenditures, 1998 (millions)	$92,019	$1,453,884	3	services	18%	20%	
R&D obligations, 1997 (millions)	$3,640	$68,424	5	government	11%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	3,640,162	559,634	1,054	2,335,624	656,705	80,394	5,751	5
Department of Agriculture	61,263	43,311	0	79	17,843	30	0	4
Department of Commerce	13,007	3,023	0	6,820	2,864	0	300	18
Department of Defense	1,217,616	133,659	1,054	1,029,214	51,303	2,386	0	8
Department of Energy	24,896	0	0	4,928	19,646	322	0	25
Department of Health & Human Services	495,579	2,159	0	12,390	444,213	35,996	821	6
Department of Interior	14,283	11,254	0	812	1,916	301	0	9
Department of Transportation	9,831	0	0	4,309	1,272	0	4,250	13
Environmental Protection Agency	11,742	0	0	1,873	8,000	1,669	200	11
National Aeronautics & Space Admin	1,713,888	366,228	0	1,274,612	33,487	39,381	180	2
National Science Foundation	78,057	0	0	1,587	76,161	309	0	8
State rank, total	5	8	19	5	6	10	11	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles"

Utah

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	3,963	483,162	33	Total R&D performance, 1997 (millions)	$1,381	$199,110	28
Doctoral engineers, 1997[1]	1,389	97,075	21	Industry R&D, 1997 (millions)	$1,027	$150,329	28
S&E doctorates awarded, 1998[1]	262	27,272	30	Academic R&D, 1997 (millions)	$234	$23,740	28
of which, in engineering	25%	22%		of which, in life sciences	51%	56%	
in life sciences	23%	25%		in engineering	21%	16%	
in psychology	15%	13%		in physical sciences	8%	10%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	357	37,928	26	expenditures, 1996 (millions)	$1,970	$189,626	31
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	423	35,413	21
in doctorate-granting institutions	4,609	424,650	29	Patents issued to State residents, 1998	666	80,287	26
Population, 1998 (000s)	2,100	274,153	35	Gross State product, 1997 (billions)	$55	$8,152	35
Civilian labor force, 1998 (000s)	1,063	139,125	35	of which, agriculture	1%	2%	
				manufacturing, mining, construction	24%	23%	
Personal income per capita, 1998	$21,019	$26,412	46	transportation, communication, utilities	9%	8%	
				wholesale and retail trade	17%	16%	
Federal spending				finance, insurance, real estate	16%	19%	
Total expenditures, 1998 (millions)	$8,728	$1,453,884	38	services	19%	20%	
R&D obligations, 1997 (millions)	$320	$68,424	28	government	14%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by state, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal Intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	319,826	117,231	0	68,306	130,820	2,691	778	28
Department of Agriculture	13,064	7,065	0	0	5,999	0	0	36
Department of Commerce	1,747	0	0	1,295	452	0	0	31
Department of Defense	185,481	106,020	0	58,658	20,803	0	0	25
Department of Energy	6,027	0	0	821	4,501	705	0	33
Department of Health & Human Services	77,998	38	0	3,570	73,491	809	90	27
Department of Interior	4,086	3,861	0	58	167	0	0	36
Department of Transportation	1,531	0	0	51	14	778	688	32
Environmental Protection Agency	748	0	0	290	458	0	0	37
National Aeronautics & Space Admin	10,177	247	0	2,405	7,375	150	0	30
National Science Foundation	18,967	0	0	1,158	12,560	249	0	27
State rank, total	28	21	na	31	28	40	43	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources – see the section, "Data Sources for Science and Engineering (S&E) State Profiles".

Vermont

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	1,752	483,162	46	Total R&D performance, 1997 (millions)	$314	$199,110	42
Doctoral engineers, 1997[1]	204	97,075	47	Industry R&D, 1997 (millions)	$246	$150,329	39
S&E doctorates awarded, 1998[1]	48	27,272	49	Academic R&D, 1997 (millions)	$60	$23,740	48
of which, in life sciences	42%	25%		of which, in life sciences	68%	56%	
in psychology	31%	13%		in engineering	3%	16%	
in engineering	19%	22%		in physical sciences	2%	10%	
S&E postdoctorates, 1997[1]				Higher education current fund			
in doctorate-granting institutions	51	37,928	45	expenditures, 1996 (millions)	$635	$169,626	44
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	103	35,413	31
in doctorate-granting institutions	624	424,650	51	Patents issued to State residents, 1998	322	80,267	37
Population, 1998 (000s)	591	274,153	50	Gross State product, 1997 (billions)	$15	$8,152	52
Civilian labor force, 1998 (000s)	330	139,125	49	of which, agriculture	2%	2%	
				manufacturing, mining, construction	23%	23%	
Personal income per capita, 1998	$24,175	$26,412	31	transportation, communication, utilities	8%	8%	
				wholesale and retail trade	16%	16%	
Federal spending				finance, insurance, real estate	18%	19%	
Total expenditures, 1998 (millions)	$2,895	$1,453,864	51	services	21%	20%	
R&D obligations, 1997 (millions)	$50	$68,424	49	government	12%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

	Performer							
Agency	Total	Federal intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	49,885	7,400	0	7,614	32,852	955	1,064	49
Department of Agriculture	5,584	1,544	0	0	4,029	0	11	47
Department of Commerce	223	24	0	52	40	0	107	49
Department of Defense	10,338	3,948	0	5,768	622	0	0	45
Department of Energy	250	0	0	0	250	0	0	49
Department of Health & Human Services	25,344	0	0	1,061	23,519	764	0	41
Department of Interior	1,920	1,884	0	8	26	0	0	48
Department of Transportation	1,154	0	0	39	169	0	946	35
Environmental Protection Agency	371	0	0	0	180	191	0	43
National Aeronautics & Space Admin	790	0	0	559	231	0	0	49
National Science Foundation	3,911	0	0	127	3,784	0	0	49
State rank, total	49	50	na	45	42	49	36	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources – see the section, "Data Sources for Science and Engineering (S&E) State Profiles"

Virginia

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997*	14,219	483,162	10	Total R&D performance, 1997 (millions)	$4,136	$199,110	14
Doctoral engineers, 1997*	3,104	97,075	11	Industry R&D, 1997 (millions)	$1,767	$150,329	16
S&E doctorates awarded, 1998*	619	27,272	14	Academic R&D, 1997 (millions)	$455	$23,740	17
of which, in engineering	25%	22%		of which, in life sciences	50%	56%	
in life sciences	25%	25%		in engineering	19%	16%	
in psychology	13%	13%		in environmental sciences	13%	6%	
S&E postdoctorates, 1997*				Higher education current fund			
in doctorate-granting institutions	634	37,928	20	expenditures, 1996 (millions)	$4,410	$189,626	12
S&E graduate students, 1997*				Number of SBIR awards, 1990-98	1,952	35,413	3
in doctorate-granting institutions	13,020	424,650	10	Patents issued to State residents, 1998	1,051	80,267	22
Population, 1998 (000s)	6,791	274,153	12	Gross State product, 1997 (billions)	$211	$8,152	13
Civilian labor force, 1998 (000s)	3,488	139,125	12	of which, agriculture	1%	2%	
				manufacturing, mining, construction	20%	23%	
Personal income per capita, 1998	$27,385	$26,412	14	transportation, communication, utilities	9%	8%	
				wholesale and retail trade	14%	16%	
Federal spending				finance, insurance, real estate	18%	19%	
Total expenditures, 1998 (millions)	$55,830	$1,453,884	6	services	21%	20%	
R&D obligations, 1997 (millions)	$4,850	$68,424	3	government	18%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by state because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

*Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

		Performer						
Agency	Total	Federal intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	4,649,753	1,654,696	205,648	2,718,179	226,968	36,822	7,340	3
Department of Agriculture	10,525	799	0	82	8,743	836	64	37
Department of Commerce	17,973	6,609	0	9,061	2,263	40	0	14
Department of Defense	3,875,822	1,293,462	138,216	2,402,659	35,513	5,815	157	2
Department of Energy	91,643	11,506	61,134	7,295	6,964	2,824	0	13
Department of Health & Human Services	149,469	710	349	29,532	109,322	8,395	1,161	20
Department of Interior	93,401	91,793	0	41	1,067	480	0	1
Department of Transportation	40,372	1,238	5,590	20,795	6,268	600	5,881	4
Environmental Protection Agency	18,866	0	0	12,697	3,012	3,157	0	5
National Aeronautics & Space Admin	490,543	245,167	0	212,567	19,915	12,817	77	6
National Science Foundation	60,938	3,412	359	23,450	31,861	1,856	0	12
State rank, total	3	3	8	3	18	15	5	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources – see the section, "Data Sources for Science and Engineering (S&E) State Profiles."

Washington

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997*	12,919	483,162	14	Total R&D performance, 1997 (millions)	$7,543	$199,110	9
Doctoral engineers, 1997*	2,474	97,075	13	Industry R&D, 1997 (millions)	$6,610	$150,329	7
S&E doctorates awarded, 1998*	449	27,272	21	Academic R&D, 1997 (millions)	$508	$23,740	13
of which, in life sciences	30%	25%		of which, in life sciences	66%	56%	
in engineering	19%	22%		in environmental sciences	11%	6%	
in social sciences	14%	15%		in engineering	9%	16%	
S&E postdoctorates, 1997*				Higher education current fund			
in doctorate-granting institutions	1,073	37,928	9	expenditures, 1996 (millions)	$3,450	$189,626	20
S&E graduate students, 1997*				Number of SBIR awards, 1990-98	795	35,413	12
in doctorate-granting institutions	5,777	424,650	25	Patents issued to State residents, 1998	1,776	80,267	13
Population, 1998 (000s)	5,689	274,153	15	Gross State product, 1997 (billions)	$172	$8,152	14
Civilian labor force, 1998 (000s)	3,039	139,125	15	of which, agriculture	2%	2%	
				manufacturing, mining, construction	18%	23%	
Personal income per capita, 1998	$27,961	$25,412	11	transportation, communication, utilities	9%	8%	
				wholesale and retail trade	17%	16%	
Federal spending				finance, insurance, real estate	18%	19%	
Total expenditures, 1998 (millions)	$31,186	$1,453,864	16	services	22%	20%	
R&D obligations, 1997 (millions)	$1,226	$68,424	16	government	14%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

*Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	1,226,154	167,356	143,527	451,601	344,568	114,787	4,315	16
Department of Agriculture	35,561	20,364	0	164	14,754	249	10	12
Department of Commerce	60,774	54,471	0	2,299	3,619	75	310	4
Department of Defense	427,471	74,735	4,739	318,450	28,855	692	0	19
Department of Energy	180,884	0	131,496	30,451	18,687	248	0	9
Department of Health & Human Services	364,610	5,019	7,103	17,037	221,177	111,318	2,956	6
Department of Interior	12,010	10,337	0	14	1,614	0	45	11
Department of Transportation	4,258	0	0	3,056	153	155	894	23
Environmental Protection Agency	3,839	0	0	70	3,117	552	100	20
National Aeronautics & Space Admin	89,007	2,371	155	77,868	8,553	60	0	12
National Science Foundation	47,740	39	32	2,192	44,039	1,438	0	15
State rank, total	16	16	10	16	10	7	12	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources – see the section, "Data Sources for Science and Engineering (S&E) State Profiles."

West Virginia

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997[1]	1,977	488,162	45	Total R&D performance, 1997 (millions)	$427	$199,110	40
Doctoral engineers, 1997[1]	351	97,075	41	Industry R&D, 1997 (millions)	$233	$150,329	40
S&E doctorates awarded, 1998[1]	101	27,272	40	Academic R&D, 1997 (millions)	$64	$23,740	47
of which, in life sciences	36%	25%		of which, in life sciences	45%	56%	
in engineering	25%	22%		in engineering	22%	16%	
in psychology	17%	13%		in environmental sciences	12%	6%	
S&E postdoctorates, 1997[1]				Higher education current-fund			
in doctorate-granting institutions	16	37,926	49	expenditures, 1996 (millions)	$697	$169,626	47
S&E graduate students, 1997[1]				Number of SBIR awards, 1990-98	16	35,413	51
in doctorate-granting institutions	2,705	424,650	38	Patents issued to State residents, 1998	189	80,267	41
Population, 1998 (000s)	1,811	274,153	36	Gross State product, 1997 (billions)	$38	$8,152	40
Civilian labor force, 1998 (000s)	800	139,125	39	of which, agriculture	1%	2%	
				manufacturing, mining, construction	30%	23%	
Personal income per capita, 1998	$19,362	$26,412	50	transportation, communication, utilities	12%	8%	
				wholesale and retail trade	14%	16%	
Federal spending				finance, insurance, real estate	11%	19%	
Total expenditures, 1998 (millions)	$10,697	$1,453,864	37	services	17%	20%	
R&D obligations, 1997 (millions)	$193	$68,424	37	government	14%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

[1] Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	193,061	86,953	30,813	39,734	23,560	10,842	1,349	37
Department of Agriculture	20,111	15,345	0	0	3,491	1,240	35	27
Department of Commerce	1,496	1,021	0	0	0	475	0	35
Department of Defense	15,575	302	0	7,875	3,829	3,569	0	41
Department of Energy	69,300	41,668	0	22,762	3,606	1,264	0	15
Department of Health & Human Services	31,646	21,795	0	1,050	7,880	0	921	38
Department of Interior	6,747	6,532	0	8	112	0	95	22
Department of Transportation	1,491	0	0	341	252	0	298	33
Environmental Protection Agency	0	0	0	0	0	0	0	na
National Aeronautics & Space Admin	11,334	0	0	7,020	4,130	184	0	29
National Science Foundation	35,361	0	30,813	76	260	4,210	0	21
State rank, total	37	24	14	34	47	26	33	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources – see the section "Data Sources for Science and Engineering (S&E) State Profiles."

Wisconsin

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997*	7,945	483,162	22	Total R&D performance, 1997 (millions)	$2,256	$199,110	23
Doctoral engineers, 1997*	1,369	97,075	22	Industry R&D, 1997 (millions)	$1,707	$150,329	19
S&E doctorates awarded, 1998	641	27,272	13	Academic R&D, 1997 (millions)	$497	$23,740	14
of which, in life sciences	28%	25%		of which, in life sciences	61%	56%	
in engineering	21%	22%		in engineering	12%	16%	
in social sciences	18%	15%		in physical sciences	8%	10%	
S&E postdoctorates, 1997				Higher education current fund			
in doctorate-granting institutions	649	37,509	16	expenditures, 1996 (millions)	$3,914	$189,626	17
S&E graduate students, 1997*				Number of SBIR awards, 1990-98	285	35,413	25
in doctorate-granting institutions	7,989	424,650	18	Patents issued to State residents, 1998	1,567	80,287	16
Population, 1998 (000s)	5,224	274,153	16	Gross State product, 1997 (billions)	$147	$8,152	19
Civilian labor force, 1998 (000s)	2,952	139,125	16	of which, agriculture	2%	2%	
				manufacturing, mining, construction	32%	23%	
Personal income per capita, 1998	$25,079	$25,412	23	transportation, communication, utilities	7%	8%	
				wholesale and retail trade	15%	16%	
Federal spending				finance, insurance, real estate	16%	19%	
Total expenditures, 1998 (millions)	$21,883	$1,453,884	24	services	17%	20%	
R&D obligations, 1997 (millions)	$332	$68,424	27	government	11%	12%	

NOTE: Rankings and totals are based on data for the 50 states, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

*Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

Federal Obligations for Research and Development by Agency and Performer, Fiscal Year 1997

Agency	Performer							
	Total	Federal intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	(In thousands of dollars)							
Total, all agencies	332,214	42,606	0	28,954	247,731	8,721	4,162	27
Department of Agriculture	35,637	23,739	0	26	11,789	83	0	11
Department of Commerce	4,040	590	0	1,666	1,784	0	0	28
Department of Defense	21,921	353	0	11,743	8,625	0	1,200	39
Department of Energy	17,248	0	0	213	17,035	0	0	27
Department of Health & Human Services	170,359	20	0	4,600	155,890	8,638	1,211	18
Department of Interior	17,156	16,895	0	4	244	0	13	7
Department of Transportation	3,787	1,009	0	41	1,511	0	1,225	25
Environmental Protection Agency	2,349	0	0	0	1,901	0	448	24
National Aeronautics & Space Admin	19,377	0	0	10,096	9,281	0	0	22
National Science Foundation	40,340	0	0	605	39,671	0	64	18
State rank, total	27	34	na	37	16	28	14	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center; SBIR = small business innovation research; na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources -- see the section, "Data Sources for Science and Engineering (S&E) State Profiles."

Wyoming

Science and Engineering Profile

Characteristic	State	U.S.	Rank	Characteristic	State	U.S.	Rank
Doctoral scientists, 1997*	656	483,162	51	Total R&D performance, 1997 (millions)	$87	$199,110	50
Doctoral engineers, 1997*	108	97,075	51	Industry R&D, 1997 (millions)	$28	$150,329	49
S&E doctorates awarded, 1998	54	27,272	47	Academic R&D, 1997 (millions)	$48	$23,740	50
of which, in life sciences	24%	29%		of which, in life sciences	37%	56%	
in physical sciences	20%	14%		in environmental sciences	24%	6%	
in environmental sciences	20%	3%		in engineering	15%	16%	
S&E postdoctorates, 1997*				Higher education current fund			
in doctorate-granting institutions	72	37,928	41	expenditures, 1996 (millions)	$305	$189,626	52
S&E graduate students, 1997*				Number of SBIR awards, 1990-98	23	35,413	49
in doctorate-granting institutions	946	424,650	49	Patents issued to State residents, 1998	45	80,287	51
Population, 1998 (000s)	481	274,153	52	Gross State product, 1997 (billions)	$18	$8,152	50
Civilian labor force, 1998 (000s)	258	139,125	52	of which, agriculture	2%	2%	
				manufacturing, mining, construction	41%	23%	
Personal income per capita, 1998	$23,167	$25,412	35	transportation, communication, utilities	13%	8%	
				wholesale and retail trade	10%	15%	
Federal spending				finance, insurance, real estate	11%	19%	
Total expenditures, 1998 (millions)	$2,743	$1,453,884	52	services	10%	25%	
R&D obligations, 1997 (millions)	$28	$68,424	52	government	13%	12%	

NOTE: Rankings and totals are based on data for the 50 States, District of Columbia, and Puerto Rico. Reliability of the estimates of industry R&D and of doctoral scientists and engineers varies by State, because the sample allocation was based on sector, not geography. The rankings do not take into account the margin of error of estimates from sample surveys.

*Data on graduate students, doctoral scientists and engineers, and postdoctorates include all graduate degree (except M.D.) candidates and recipients in S&E fields, including health fields. Data on doctorates awarded do not include health fields.

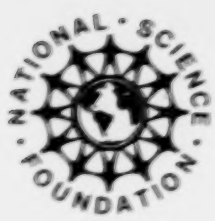
Federal Obligations for Research and Development by Agency and Performer: Fiscal Year 1997

Agency	Performer							
	Total	Federal intramural	All FFRDCs	Industrial firms	Universities & colleges	Other nonprofits	State & local government	State rank, total
	[In thousands of dollars]							
Total, all agencies	28,368	8,720	0	675	16,169	2,469	335	52
Department of Agriculture	7,243	4,555	0	0	2,688	0	0	41
Department of Commerce	396	0	0	0	396	0	0	43
Department of Defense	1,889	397	0	113	1,379	0	0	52
Department of Energy	4,649	0	0	50	2,080	2,469	50	35
Department of Health & Human Services	1,162	0	0	99	1,037	0	26	52
Department of Interior	3,913	3,768	0	0	145	0	0	38
Department of Transportation	359	0	0	0	100	0	259	50
Environmental Protection Agency	602	0	0	0	602	0	0	42
National Aeronautics & Space Admin	616	0	0	125	491	0	0	50
National Science Foundation	7,539	0	0	288	7,251	0	0	45
State rank, total	52	49	na	50	49	41	50	na

NOTE: Federal R&D obligations are as reported by funding agencies. Ranks and totals are based on data for the 50 States, District of Columbia, and Puerto Rico.

KEY: FFRDC = federally funded research and development center. SBIR = small business innovation research. na = not applicable.

SOURCES: Prepared by the National Science Foundation/Division of Science Resources Studies. Data compiled from numerous sources – see the section, "Data Sources for Science and Engineering (S&E) State Profiles."



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